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ABSTRACT

Concerned about how well the United States Military Academy treats women and minorities, this report addresses differences in performance and experience between gender and between whites and minorities for the classes 1988 through 1992, perceptions of the fairness of the treatment that female and minority cadets receive, and actions the Academy has taken to enhance the success of women and minorities. Indicators of performance and experience show that male and female cadets encounter some differences during their Academy years. For example, women consistently receive offers of admission at higher rates than men but also experience higher attrition than men. While minority admission rates are higher than whites, academic predictor scores and academic, physical education, and military grades are lower for minorities than for whites. A survey of cadets, staff, and faculty reveal perceptions that women and minorities generally receive treatment equal to that of men and whites. Addressing the issues that affect women and minorities, the United States Military Academy aims to establish through a number of steps an atmosphere where all cadets are encouraged and able to perform at their best. The recommendations include development of data systems for systematic analysis, routine monitoring of performance indicators of groups, and the establishment of a system to ensure that results are used and actions monitored. Three appendices contain a description of questionnaire methodology, an analysis of Academy data, and the major contributors to the report. (CK)

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ED 373 015

United States General Accounting Office

GAO

Report to Congressional Requesters

March 1994

MILITARY ACADEMY

Gender and Racial Disparities

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GAO

United States
General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

B-256105

March 17, 1994

The Honorable Sam Nunn
Chairman, Committee on Armed Services
United States Senate

The Honorable John Glenn
Chairman, Subcommittee on Military Readiness
and Defense Infrastructure
Committee on Armed Services
United States Senate

The Honorable Richard C. Shelby
Chairman, Subcommittee on Force Requirements
and Personnel
Committee on Armed Services
United States Senate

As requested, we reviewed the treatment of women and minorities at all three of the service academies. This report deals with the U.S. Military Academy. Specifically, the report addresses (1) differences in indicators of performance and experience between men and women and of whites and minorities, (2) perceptions of the fairness of the treatment that female and minority cadets receive, and (3) actions the Academy has taken to enhance the success of women and minorities at the Academy.

We are sending copies of this report to interested congressional committees, other interested Members of Congress, the Secretaries of Defense and the Army, and the Superintendent of the Military Academy. We will also make copies available to other parties on request.

This report was prepared under the direction of Mark E. Gebicke, Director, Military Operations and Capabilities Issues, who can be reached on (202) 512-5140 if you or your staff have any questions. Other major contributors are listed in appendix II.

Frank C. Conahan
Assistant Comptroller General

Executive Summary

Purpose

Concerned about how well the service academies were treating women and minorities, the Chairman of the Senate Committee on Armed Services and the former Chairman of its Subcommittee on Manpower and Personnel asked GAO to examine this issue. GAO has reported separately on disparities at the Naval Academy and the Air Force Academy. This report deals only with the U.S. Military Academy and addresses (1) differences in performance and experience indicators between men and women and between whites and minorities for the classes of 1988 through 1992, (2) perceptions of the fairness of the treatment that female and minority cadets receive, and (3) actions the Academy has taken to enhance the success of women and minorities at the Academy. This report does not address the causes of any gender or racial differences in the indicators.

Background

Established in 1802, the Military Academy has a long tradition of training and providing military officers for the Army. The Academy's curriculum provides for development of its cadets in academic, military, and physical areas. Additionally, it emphasizes moral and ethical development of cadets through its Honor Code. Minorities have attended the Academy since the 1800s, but their numbers have been relatively small until recent times. Congress authorized women to attend the Academy beginning in 1976. At the beginning of academic year 1993-94, minorities constituted 16.5 percent of the student body, referred to as the Corps of Cadets, and women constituted 11.7 percent.

Results in Brief

Indicators of performance and experience showed that male and female cadets encountered some differences during their Academy years. Each group fared better in some comparisons and worse in others. For example, women consistently received offers of admission at higher rates than men, but also consistently experienced higher attrition than men. Women's academic grades were lower than men's, particularly during freshman and sophomore years, despite generally higher academic predictor scores. In contrast, women achieved somewhat higher physical education grades despite lower predictor scores in this area. Although reviewed more frequently for Honor Code violations and for failure to meet academic standards, women were recommended for separation at lower rates.

While minorities were consistently offered admission at higher rates than whites, they had lower academic predictor scores and lower academic, physical education, and military grades. Related to these factors, more minorities were reviewed for serious failure to meet academic standards

and fewer minorities graduated in the top quarter of their classes. Minorities were also reviewed at higher rates than whites for Honor Code violations and were recommended for separation for honor reasons, at generally higher rates than whites.

A GAO survey of cadets, staff, and faculty revealed perceptions that women and minorities generally received treatment equal to that of men and whites. However, some male cadets perceived that women were treated better in some areas. To a somewhat lesser degree, some white cadets perceived minorities were treated better in some areas.

The Academy has studied the performance of women and some minority cadets and was aware of many of the disparities GAO identified. It has taken a number of steps to establish an atmosphere where all cadets are encouraged and able to perform at their best. However, its studies have had limitations regarding certain areas of Academy life (such as the conduct and honor systems), coverage of all subgroups, criteria for determining when disparities warrant more in-depth attention, and provision for tracking action on recommendations.

Principal Findings

Gender Differences in Academy Student Data

Overall, GAO made gender comparisons across 11 indicators of Academy experience and performance. In 2 of the 11 indicators—admission offered and physical education grades—women consistently fared better than men. Similarly, in 2 of the 11 indicators—attrition rates and selection for top cadet leadership positions—men consistently fared better than women. Women and men were about equal in their rates of being assessed as qualified applicants. All other indicators show more mixed results, both with regard to the consistency of direction and magnitude of the disparities.

While women generally had higher average academic predictor scores, their academic grade point averages were often lower than men's. However, while women's grade point averages tended to be lower than men's primarily during the freshman and sophomore years, their averages have caught up and in some cases exceeded men's in the junior and senior years. While women's physical education grades were often higher than men's, their military development grades were often lower. Female cadets

were reviewed for honor violations and serious academic failures at higher rates than male cadets, but were recommended for separation at lower rates. As a result of their often lower grades, women graduated in the top quarter of their classes at generally lower rates than men.

Racial Differences in Academy Student Data

In 8 of the 11 indicators GAO used to measure performance and gauge experiences, regularity of the data and tests of significance consistently showed that whites did better than minorities: qualification rates, academic predictor scores, academic grade point averages, physical education grades, military development indexes, selection for top cadet leadership positions, attrition, and rate of appearance in the top quarter of graduating classes. In only one indicator—offer rates—did the consistency of the data and significance tests clearly show that minorities fared better.

For three indicators (honor system actions, Academic Board actions, and attrition), comparisons showed more mixed results. Minorities were charged with violations of the Honor Code and had their charges dismissed at higher, but not significantly higher, rates than whites. They were found guilty at lower rates than whites, but separated at significantly higher rates. The Academic Board's consideration of serious failures included significantly higher percentages of minority cadets than white cadets in each of 4 academic years. However, the rate at which the Academic Board recommended separation for minorities was lower, but not significantly in 3 of the 4 years. Comparisons of qualification and attrition rates showed minorities disadvantaged in comparison to whites in 4 of 5 years.

Perceptions of the Treatment of Women and Minorities

In response to GAO questionnaires, the majority of cadets, staff, and faculty perceived that, in general, women and minorities received the same treatment as men and whites by various Academy systems. Nevertheless, one-third to one-half of male cadets indicated that women received favored treatment by Academy staff and faculty. Whites perceived favored treatment of minorities by the Academic Board for failure to meet academic standards. About 20 percent of staff and faculty also perceived favored treatment of women and minorities by the Academic Board.

Academy Actions to Address Issues That Affect Women and Minorities

Through studies of the performance and experiences of female and some minority cadets, the Academy has identified several of the issues contained in this report. It has taken actions to address many of the

problems, including (1) training to increase the awareness of the treatment of women and minorities among cadets, staff, and faculty; (2) changes to the curriculum; and (3) the creation of a human resources council responsible for monitoring the climate of the Corps.

However, some areas of cadet life have received little meaningful analysis. For example, the Academy relies on case reviews of cadets recommended for separation to monitor the fairness of its adjudicatory systems. This methodology does not allow the Academy to identify whether certain groups are being reviewed more frequently than would be expected under these systems. Little study has been done of the impact of the conduct system on the various cadet subgroups. In addition, the Academy does not have a system to ensure that recommendations from various internal and external studies are implemented into action plans. Indicators of problems identified in some internal studies appear to have been discounted.

Recommendations

GAO recommends that the Superintendent of the Military Academy take action to (1) develop data systems that will permit systematic analysis of the various adjudicatory systems at the Academy, (2) routinely monitor performance indicators for groups designated in the Department of Defense's Equal Opportunity Program and establish criteria for assessing when disparities warrant more in-depth attention and corrective action, and (3) establish a system to ensure that the results of studies by oversight and review groups are used and that actions on recommendations be monitored.

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Abbreviations

CEER	Combined Entrance Examination and High School Rank
HRC	Human Resources Council

Introduction

The U.S. Military Academy was established in 1802 at West Point, New York. Each summer, the Academy admits a new class of over 1,000 men and women between the ages of 17 and 22, who join three other classes to form the Corps of Cadets. These cadets are selected from qualified applicants (applicants who meet academic, physical, and other standards) and have been nominated by a congressional or other nominating source. On registration day, cadets are administered an Oath of Allegiance and an Agreement to Serve. Upon graduation, each cadet is commissioned as a second lieutenant in the Army, with an obligation to serve for 5 years.[1]

Representation of Women and Minorities at the Academy

Congress authorized women to enter the service academies beginning in academic year 1976. That year, 119 female cadets were admitted to the Military Academy, constituting 8 percent of the entering class. Four years later, 62 of the women graduated, representing 6.8 percent of the class of 1980. In 1989, for the first time, a female cadet was selected as First Captain of the Corps of Cadets—the highest position attainable by a cadet. As of the beginning of fall semester 1993, women comprised 11.7 percent of the total Corps of Cadets.

Minorities[2] were first admitted to the Academy in the mid-1800s, but until fairly recently they were few in number. The first black graduated in 1877. However, in this century, the first black to graduate was a member of the class of 1936. The 1,000th black cadet graduated with the class of 1991. The first Hispanic graduate of the Military Academy was a Cuban cadet who graduated in the 1840s. Most of the early Hispanic graduates were foreign born but more recently, the number of U.S.-born Hispanic cadets has been rising. Asians have been members of the Corps for about 20 years. As of the beginning of the fall 1993 semester, the Corps consisted of 6.3 percent black, 4.2 percent Hispanic, and 5.4 percent cadets of Asian or Pacific island descent. Cadets who identified themselves as "Other" minorities were less than 1 percent.

Military Academy Program

The Academy provides cadets a program of training in academics, military development, and physical performance. Integrated into each of these areas is training in leadership. As cadets, they are paid more than $6,500 a

[1]For those graduating in 1996 and thereafter, this obligation increases to 6 years. Generally, those graduating from the Military Academy serve in the Army, but the obligation may be met by service in other branches of the Armed Forces.

[2]The term "minority" as used in this report includes cadets who have classified themselves as either black, Hispanic, Asian, native American, Alaska native, or "Other."

year in addition to free room, board, tuition, and medical care. During their years at the Academy, cadets attend a full schedule of academic courses, maintain themselves in accordance with the Academy's physical standards, and develop their knowledge of military principles and operations.

The Corps is comprised of 36 companies of about 120 cadets each. Each company has cadets from all four classes (freshman, sophomore, etc.) who generally live together in cadet barracks. While women live with women and men with men, their rooms are intermingled. An effort is made to balance the companies so that each will have at least two female cadets from each of the four classes and a distribution of minority cadets. The companies are further balanced by capabilities of their cadets, providing comparable distributions of those who excel as scholars, athletes, and leaders.

Cadets are assigned duties within their companies, and each company is commanded by an Army officer in the position of company tactical officer. Freshmen—referred to as plebes—perform duties such as delivering mail and laundry to learn to follow orders; cadets in higher classes train and supervise others or direct cadet activities. The purpose of this arrangement is to give each cadet progressive leadership responsibilities.

Academy Organization and Standards

As an Army installation, the Academy is commanded by the Superintendent, who assures that academic standards and standards of conduct are maintained. He is assisted in his administration by the Commandant of Cadets, who oversees military and physical training, discipline, and the operation of the Corps, and by the Dean of the Academic Board who is responsible for all academic matters.

Cadets who fail to meet standards of conduct are reviewed by the a conduct board under the oversight of the Commandant. Conduct standards cover a wide range of topics such as uniforms and appearance, social behavior, and maintenance of barracks and quarters.

The records of cadets who fail to meet academic standards are reviewed by the Academic Board, which is chaired by the Dean. The Academic Board reviews the case of each cadet who fails to achieve the requisite grade point average for his or her class (e.g., plebes must attain a 1.6 average on a 4.0 scale and seniors must attain a 2.0) or who is

otherwise academically deficient. Academic courses include not only traditional academic courses such as sciences or humanities but also

- military development, which considers a cadet's military bearing and performance of miscellaneous duties and leadership experiences in his/her company or in the Corps;
- military science, which is a series of courses on such matters as combined arms operations, map reading and small unit tactics, or maintaining unit readiness; and
- physical education, which includes instruction in activities such as swimming and gymnastics, participation in sports, and scores achieved on the Academy Physical Fitness Test and the Indoor Obstacle Course Test, both of which must be passed at specific points in a cadet's career.

In addition to meeting academic standards, a cadet must meet ethical standards as embodied in the Cadet Honor Code: "A cadet will not lie, cheat or steal nor tolerate those who do." The cadets themselves are charged with upholding the Honor Code. They elect honor representatives who serve during their junior or senior year at the Academy. Charges that a cadet violated the Honor Code are investigated by cadet honor committee representatives who determine whether the evidence warrants a hearing by an honor board comprised of other cadets.

A finding of failure to meet standards by the Academic Board or an honor or conduct board could result in a cadet being recommended for separation from the Academy. The Superintendent is the final Academy judge on recommendations for separation, but the final decision rests with the Secretary of the Army. If a cadet is separated after the beginning of the junior year, he/she may be activated into the Army or the Army reserves to fulfill the obligation assumed upon registration.

Admission and Graduation Requirements

The Academy admits and graduates only those individuals who meet its standards. Standards for graduation are designed to assure only those individuals who are capable of serving as military officers are awarded diplomas. During the 4 years of training, a cadet must demonstrate the capability of meeting all of the Academy's academic, physical, ethical, and conduct standards.

Admissions

To become a qualified candidate for admission, an applicant must meet basic criteria that include such considerations as age, physical condition,

and demonstrated academic capabilities. About 20 percent of all applicants become qualified candidates for admission. To assist in the process of deciding which candidates to offer admission, the Academy uses a rating system. It individually assesses each candidate's academic, leadership, and physical potential, converting these assessments into predictor scores and combining these scores into a Whole Candidate Score. Of the three factors making up the Whole Candidate Score, the Academy considers the academic predictor score the most reliable measure used to predict a cadet's success at the Academy and gives it the most weight. This academic predictor score is referred to as the Combined Entrance Examination and High School Rank (CEER) score.

However, the Academy does not base admission decisions solely on its ratings, which it recognizes as limited. It attempts to balance the Corps geographically, and it develops goals for each class for desired percentages of scholars, leaders, athletes, women, blacks, Hispanics, and other minorities. The gender, race, and ethnicity goals are based on women's and minorities' representation in the national population and in the national pool of college bound people, and their representation in the Army. The admission goals in 1989 through 1991 were 10 to 15 percent women, 7 to 9 percent black, 4 to 5 percent Hispanic, and 2 to 3 percent Asian/Native American and other minorities. In 1992 the Academy increased the goal for Hispanics to 4 to 6 percent.

Graduation Requirements

In the years covered by our review, about 70 percent of cadets in an entering class have graduated. Some cadets resign voluntarily, having determined that their interest in a military career has changed. They are allowed over 2 years at the Academy to decide their interest in being commissioned without incurring a definite military obligation.

A cadet's success at the Academy affects his or her career. Upon graduation, cadets select Army branches and location of assignments in the order of their overall performance at the Academy. Those in the top half of the class will likely receive their first choice of branch and location. Class standing may also affect future assignments.

Cadets' achievements at the Academy are reflected in academic, physical, and military performance scores. These scores are a cadet's academic grade point average; a reflection of a cadet's overall physical performance, including achievements in sports as well as grades received on fitness tests and in physical education courses; and a compilation of military

ratings (received for summer assignments and for assignments in the Corps) and military science grades. They are combined using a weighted formula to produce an overall cadet performance score. The composition and weighing of these scores was changed in 1990 to better reflect a cadet's time at the Academy. The cadet who graduates first in the class is not necessarily the cadet with the best academic average, but is the cadet who had the best success in mastering the Academy's academic, military, and physical requirements.

Objectives, Scope, and Methodology

This is one of a series[3] of reports on the treatment of female and minority cadets at Department of Defense service academies. It responds to requests of the Chairman of the Senate Committee on Armed Services and the former Chairman of its Subcommittee on Manpower and Personnel, who asked us to examine the treatment of women at service academies, and former Congressman Albert G. Bustamante who asked us to similarly review the treatment of minorities.

The objectives of this review were to (1) assess whether significant differences existed between men and women and between whites and minorities on a variety of indicators, (2) identify perceptions of those associated with the Academy regarding the fairness of treatment of female and minority cadets, and (3) determine what actions the Academy has taken to enhance the success of women and minorities at the Academy.

We performed our review at the Military Academy at West Point, New York, where we reviewed policies, regulations, and procedures and interviewed Academy officials, faculty members, and groups of cadets. We also administered three questionnaires to cadets, faculty members, and other Academy staff. The questionnaires were administered to randomly selected personnel in the spring of 1991. They covered a range of student-related subjects, including the treatment of women and minorities. A detailed description of the questionnaire and related methodological issues appears in appendix I.

The performance indicators we used to make gender and racial group comparisons were selected to cover a spectrum of student experiences beginning with application for admission and ending with graduation. The

[3]Other reports in this series are DOD Service Academies: More Changes Needed to Eliminate Hazing (GAO/NSIAD-93-36, Nov. 16, 1992); Naval Academy: Gender and Racial Disparities (GAO/NSIAD-93-54, Apr. 30, 1993); Air Force Academy: Gender and Racial Disparities (GAO/NSIAD-93-244, Sept. 24, 1993); and DOD Service Academies: More Actions Needed to Eliminate Sexual Harassment (GAO/NSIAD-94-06, Jan. 31, 1994).

available data varied in the time periods covered. Some data were available by class year, while other data were available by academic year or for only 1 or 2 years. The following are groups of indicators we used to compare cadet experiences.

- Admissions data: (1) the rate of qualification, (2) rate at which admission was offered, and (3) CEER scores of those admitted.
- Performance data: (1) academic grade point averages, (2) military development indexes, and (3) physical education grades.
- Honor system data: (1) the rate at which cadets were charged with violations of the Honor Code, (2) the rate at which honor charges against cadets were dismissed, (3) the rate at which honor hearings resulted in findings of guilt, (4) the rate at which cadets found guilty were recommended for separation, and (5) the rate of election as honor representatives.
- Academic Board data: (1) the rate at which cadets were reviewed for multiple or repeated failures by the Academic Board[4] and (2) the rate at which cadets were recommended for separation by the Academic Board.
- Graduation data: (1) the attrition rate (the rate at which cadets separated from the Academy) and (2) the rate of appearance in the top quarter of the graduating class.

To assess whether any pattern existed with regard to the direction of observed differences in the indicators, we determined the number of times each gender or race subgroup was lower or higher on each measure for each period examined. We then considered the likelihood of obtaining that observed distribution of lows and highs if there were no systematic differences between the subgroups.

To assess whether observed gender or racial differences in indicators were significant, we applied tests of statistical significance and used a rule of thumb (called the "four-fifths test") on our comparisons. A more detailed description of the performance indicators used, the source of that data, and the types of tests used to assess differences appears in appendix II.

Changes in the components of certain of the Academy's grades and in the compilation of cadets' overall class standings occurred in 1990. As a result, we assessed and compared military performance data and physical

[4]The Academic Board considers standard disposition and nonstandard disposition cases. Standard disposition refers to less serious failures for which separation from the Academy or repeating a year are not likely consequences. Nonstandard disposition refers to the most serious cases such as cadets deficient in three or more courses. These are cadets considered for separation, delayed graduation, or other individual attention.

education grades on a class-by-class basis. Due to uncertainties about the completeness and accuracy of cadet conduct data, we did not use the conduct system as one of our indicators.

We discussed a draft of this report with senior officials from the Academy and the Office of the Secretary of Defense. They suggested a number of technical clarifications, which have been incorporated in this report.

Our review was performed from March 1991 to January 1994 in accordance with generally accepted government auditing standards.

Indicators Reveal Some Gender Disparities

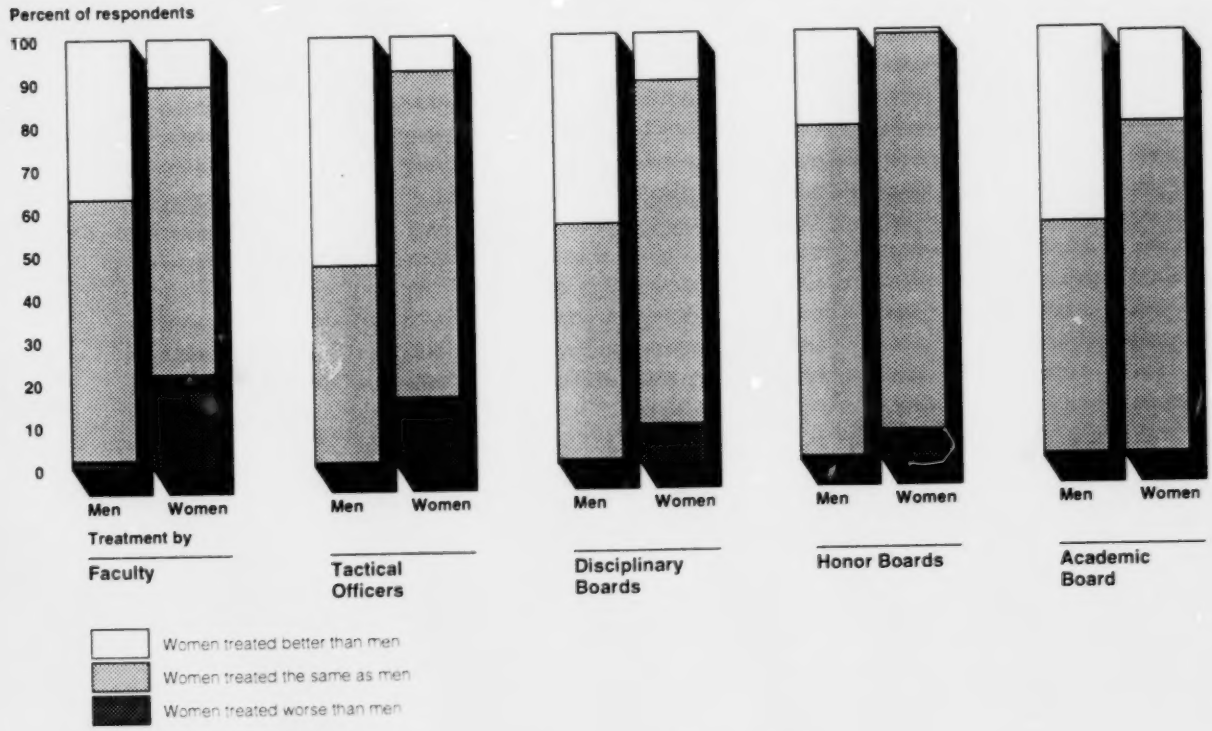
The experience of male and female cadets was somewhat mixed across most of the indicators. On average, women have generally not fared as well as men in their academic or military grades. Women also had a higher rate of appearance before the Academic Board for serious academic failures, but were recommended for separation at a somewhat lower rate. An analysis of honor system proceedings showed women encountered different experiences than men under that system—while women were charged at about the same rate as men, their cases were more likely to be dismissed, and while women were more likely to be found guilty, they were less likely to be recommended for separation. Women's rates of attrition have consistently been higher than men's. With regard to offers of admission and physical education grades, female cadets have fared better than their male counterparts. The major proportion of each gender group perceived that female cadets were treated essentially the same as male cadets. However, a significant percentage of the males indicated a belief that women were treated better than men in certain areas of Academy life.

Cadets' Perceptions of the Treatment of Women

In our questionnaire, we asked respondents to indicate whether they believed that women were treated better than, the same as, or worse than men by faculty, tactical officers, disciplinary boards, honor boards, and the Academic Board. Two-thirds or more of the female cadets indicated that women were treated the same as other cadets; the remainder were divided in their opinions as to whether they believed women were treated more or less favorably by the various boards and by staff and faculty.

While about half of the male cadets thought women were treated the same as men, almost as many men thought women had received favored treatment by the Academic Board, by conduct boards, and by tactical officers. In contrast, three quarters of the male cadets thought women were treated the same as men by honor boards, and two-thirds thought women were treated the same by faculty. In general, only 1 to 2 percent thought women were treated less favorably by any of these groups (see fig. 2.1).

Figure 2.1: Cadets' Perceptions of the Treatment of Women by Various Academy Groups



Source: Responses to GAO questionnaire.

Most staff and faculty thought female cadets were treated the same as males by all boards, but some perceived favored treatment. Eighteen percent thought the Academic Board treated female cadets more favorably than male cadets. Small percentages of the staff and faculty thought women were treated less favorably than men by the various boards.

Performance and Experience Indicators for Male and Female Cadets Show Mixed Results

We made gender comparisons across 11 indicators of the Academy experience. In 1 of the 11 indicators, significance tests and consistent direction of the disparities clearly indicated a difference between the experience of women and men—women consistently left the Academy at a higher rate. Women tended to fare better than men with regard to offers of admission and physical education grades. All other indicators displayed somewhat mixed results. Table 2.1 presents the results of the tests performed on the various indicators in summary form. A discussion of these indicators and our analysis follow.

Table 2.1: Summary of Gender Comparisons

Performance indicator	Data available	Number of comparisons	Comparisons that favored women	Comparisons that favored men	Comparisons that showed men and women equal
Qualification rates	Classes of 1988-92	5	1 (0)	4 (0)	0
Offer rates (see fig. 2.2)	Classes of 1988-92	5	5 (2[a])	0 (0)	0
Academic predictor scores (see fig. 2.3)	Classes of 1988-92	5	4 (1[b])	1 (0)	0
Academic grade point averages by semester (see figs. 2.4 and 2.5)	Classes of 1988-92	40	13 (2[b])	25 (8[b])	2
Physical education grades (see fig. 2.6)	Classes of 1988-92	5	4 (1[b])	1 (0)	0
Military development grades by semester (see fig. 2.7)	Classes of 1988-92	34	10 (3[b])	24 (15[b])	0
Cadet leadership positions (see text)	Classes of 1988-91	8	1[c]	7[c]	0
Honor charge, dismissal, conviction, and recommended separation rates and selection as Honor Representative (see fig. 2.8)	Academic years 1988-91	5	2 (2[a])	3 (1[a])	0
Academic Board review and separation rates (see figs. 2.9 and 2.10)	Academic years 1988-91	8	3 (2[a])	5 (3[a])	0
Attrition rates (see fig. 2.11)	Classes of 1988-92	5	0 (0)	5 (4[a])	0
Class standings (see fig. 2.12)	Classes of 1988-92	5	1 (0)	4 (2[a])	0

Note: ( ) indicates the number of significant differences using one or both types of tests.

[a]We used both a statistical significance and the 4/5ths test for these comparisons.

[b]We used a statistical significance test for these comparisons.

[c]We were unable to apply tests of statistical significance due to data limitations.

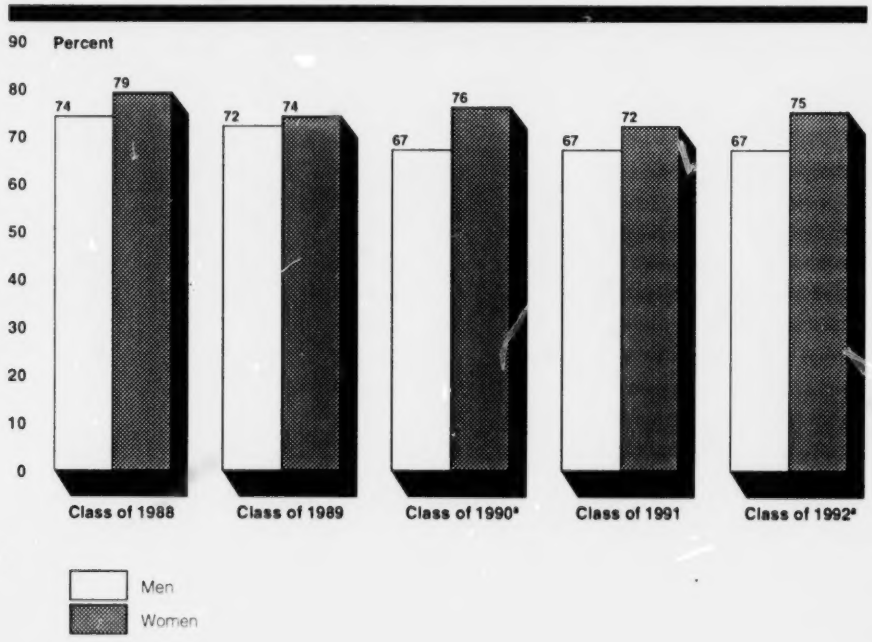
Admissions Process

Applicants who complete the admissions requirements become candidates for admission to the Academy. Candidates who meet the Academy's academic, physical, and leadership standards and receive a nomination are considered qualified for admission. Women were qualified at somewhat lower rates than men. Nevertheless, they were offered admission at higher rates than men.

Qualification Rates for Men and Women Were Essentially Similar, but Offer Rates Were Higher for Women

Admission standards, with the exception of some allowances for physical differences, are the same for men and women. For the classes of 1988 through 1992, male candidates were judged qualified at a higher rate than female candidates in 3 of the years; females were judged qualified at a higher rate than males in 1 year; and the rate was equal in 1 year. None of the differences was significant. In each of the 5 years, qualified women were offered admission at higher rates than men, but the difference in rates was significant in only 2 of the 5 years. Figure 2.2 displays the rates of admission offered qualified male and female candidates.

Figure 2.2: Rates at Which Qualified Male and Female Candidates Received Offers of Admission



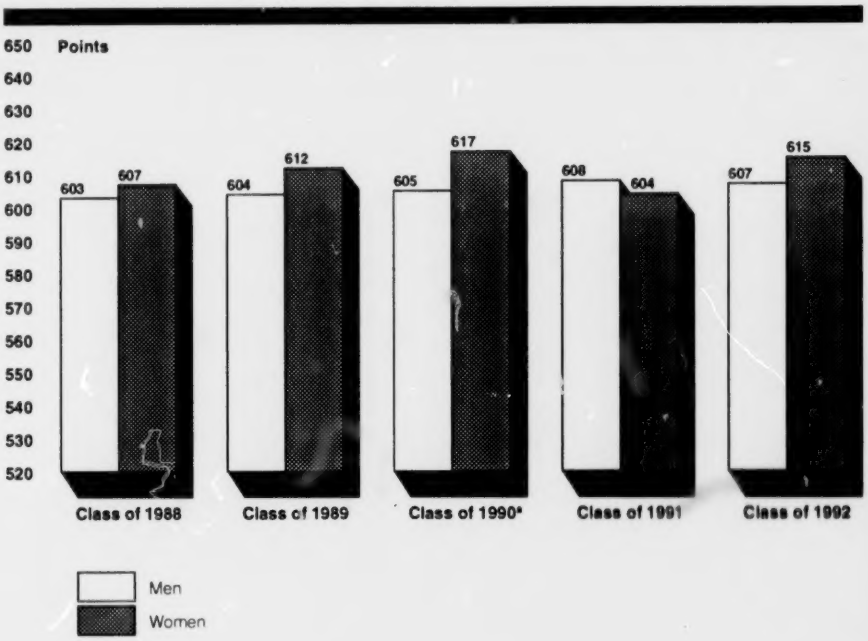
[a]Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

Academic Predictor Scores Were Somewhat Higher for Women

A major factor in qualification and admission decisions is the CEER score. This score is regarded by the Academy as its best predictor of academic success, and it is an important factor in the admissions decision process. In 4 of the 5 years, women's average CEER scores were higher than men's. The difference, however, was significant in only one of the years. Figure 2.3 compares the average CEER scores of entering male and female freshmen for the classes of 1988 through 1992.

Figure 2.3: Average Female and Male CEER Scores



Note: CEER scores below 520 indicate academic risks; CEER scores above 650 indicate scholars.

[a]Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

Academy Able to Meet Goals for Women Without Special Recruiting Effort

Without any special recruiting programs for women, the Academy was able to meet its goal of 10 to 15 percent women for each entering class from 1988 through 1992. Officials stated that the percentage of women in the Corps had been restrained only by the level of interest among applicants. They pointed out that today's Army is about 12 to 13 percent women and that their goal is consistent with this proportion. Further, the responsible official stated that the female composition of the Corps is about right given women's interest in the Academy and their competitiveness for admission.

Indicators of Academic, Physical, and Military Performance Show Mixed Results

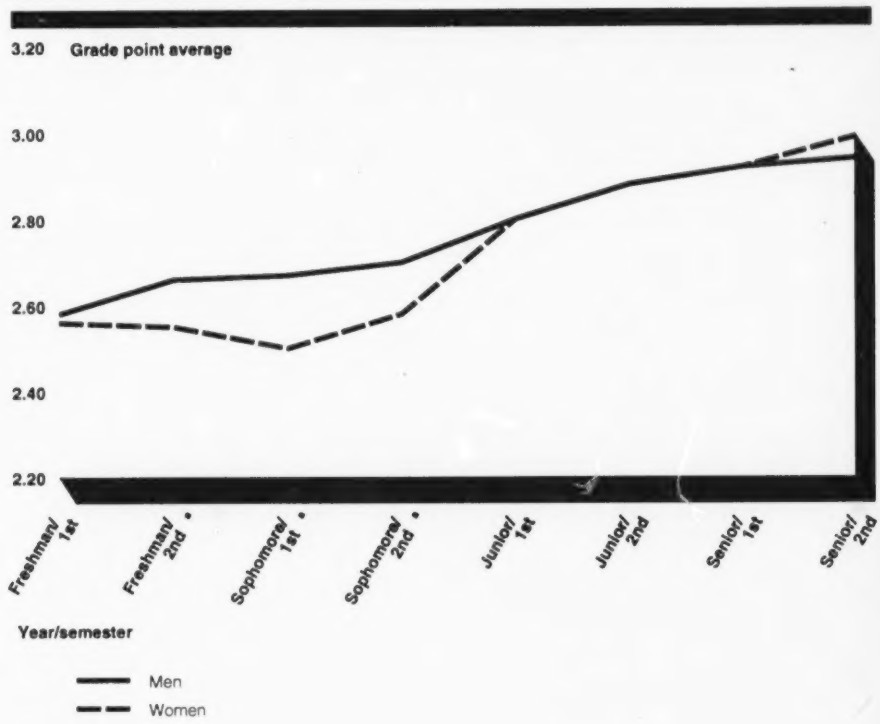
The following differences appeared in the grades achieved by male and female cadets:

- Over cadets' entire 4-year period at the Academy, women achieved somewhat lower grade point averages than men. However, examination of semester-by-semester data showed that female cadets' academic grade point averages were lower in their freshmen and sophomore years and more similar to those of male cadets in their junior and senior years.
- Women's average physical education grades were significantly better than men's in one of the five graduating classes. In three of the other four classes, women's grades exceeded men's, but differences were not significant.
- Male cadets' average military performance indexes exceeded those of female cadets' in four of the five classes.

Women's Academic Grade Point Averages Were Generally Lower in First Two Years

We compared the academic grade point averages of five classes of male and female cadets, by semester, for each of eight semesters, for a total of 40 comparisons. The semester grades for the five classes have been combined in figure 2.4 for illustrative purposes. As shown in the figure, women's grades were consistently lower in the freshman and sophomore years, and they exceeded men's in second semester senior year.

Figure 2.4: Male and Female Cadets' Grade Point Averages for the Classes of 1988 Through 1992

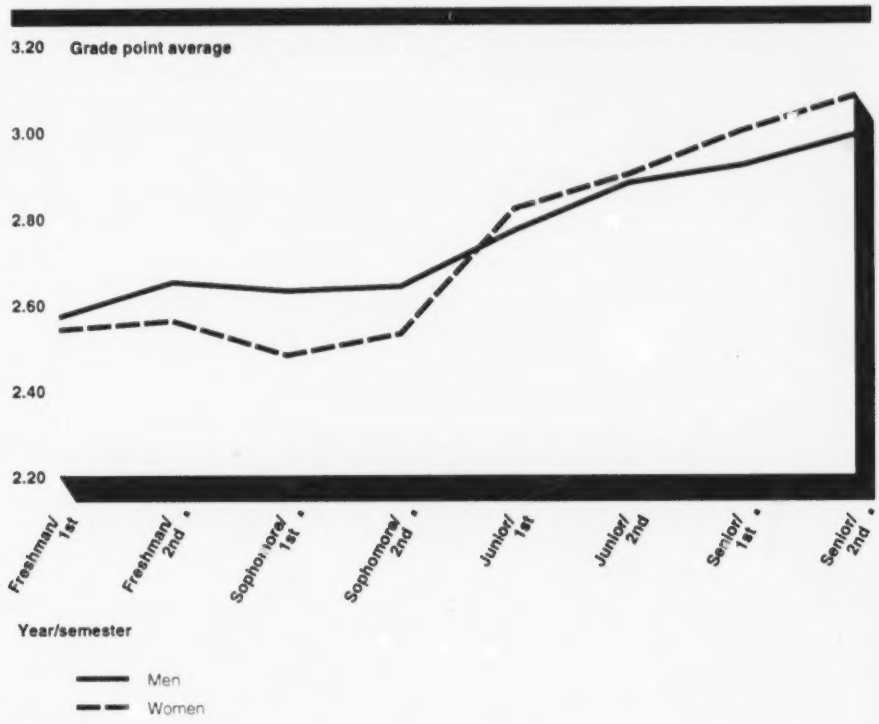


[a]Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

Examination of the semester-by-semester data showed that while female cadets in the classes of 1988 and 1989 received generally lower grade point averages than male cadets throughout their 4 years, female cadets in the classes of 1990 and beyond received lower grade point averages only in their freshman and sophomore years. In their junior and senior years, these female cadets achieved higher grade point averages than the male cadets (see fig. 2.5).

Figure 2.5: Male and Female Cadets' Grade Point Averages for the Classes of 1990 Through 1992



[a]Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

To assess whether observed differences between the academic grades of male and female cadets were due to differences in academic potential that existed at the time they entered the Academy, we performed a series of regression analyses.[1] For the classes of 1988, 1989, 1990, 1991, and 1992, we ran regression analyses on the cadets' cumulative grade point averages at the end of each of their eight semesters. Entrance predictor scores

[1]A regression analysis is a statistical technique that allows the effects of multiple predictor variables to be simultaneously assessed. By entering the predictor variables into the regression analysis in separate steps, the unique contribution of a predictor variable to the variation in a criterion variable can be determined while the effects of all other measured predictor variables are controlled.

(CEER scores)[2] were entered into the regression equation as the first step, with race entered as a second step, and gender added as a third step. All three variables were entered into each equation, regardless of any other criteria so that the direction of the relationship could be determined. This resulted in 40 separate regression analyses (8 each for the 5 classes) where the independent effect of gender could be assessed.

Overall, the CEER scores accounted for a modest proportion (34 to 45 percent) of the total variation in grade point averages. After controlling for differences in CEER scores, gender still explained a small (0.02 percent to 3.9 percent) but statistically significant (at the 95-percent level of confidence) proportion of the variance in grade point averages in 18 of the regression analyses. All 40 regression coefficients for gender were negative and ranged from –0.02 to –0.19. The average regression coefficient for gender across the 40 regressions was about -.08, meaning that the grade point average of a female cadet averaged 0.08 lower than that of a male cadet of the same race with the same CEER score. Thus, gender was correlated to some extent with academic performance beyond the difference that could be explained by differences in CEER scores.

Women's Physical Education Grades Were Generally Higher Than Those of Men

Women received higher average grades than men in physical education in four of the five classes we reviewed. The difference was significant for one of the five classes. However, male and female cadets are not subject to the same requirements in this area.

Physical education grades are based on a compilation of grades earned in subcourses such as aerobics, basketball, or close quarters combat as well as performance on the Academy's physical fitness test and its indoor obstacle course. The Academy requires cadets to take 4 years of physical education with each year regarded as a course. The content of the subcourses differs somewhat for men and women during their first 2 years. For example, men take boxing and wrestling while women take self-defense. Requirements are the same in the later 2 years as cadets, who have learned to physically train and develop others, acquire skills in lifetime sports (such as golf and tennis).

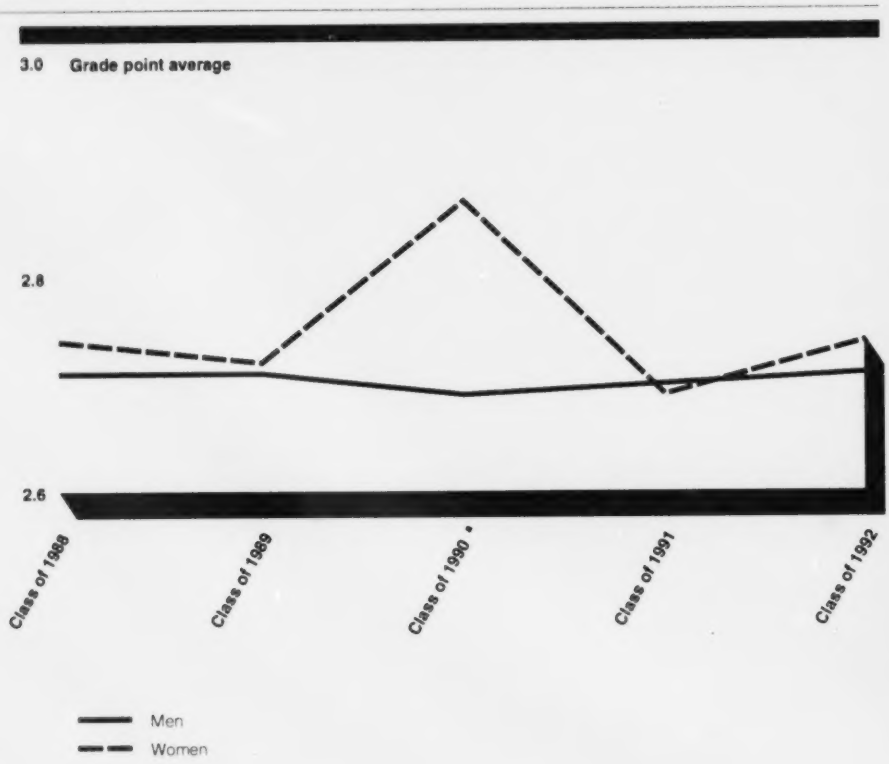
As cadets progress, a higher percentage of their physical education grade is based on the physical fitness and indoor obstacle course tests as an indicator of their commitment to assume responsibility for developing

[2]We used the CEER scores as an independent variable in this analysis because they are the main indicator that Academy officials use to predict academic success. We did not examine the development of this measure, and we make no assumptions about its validity in the admissions process.

himself or herself physically. Standards for the Academy's physical fitness test are based on the Army's standards. Because of physiological differences, both the Army's and the Academy's physical fitness test standards are different for men and women. For example, to receive a score of 90 on the push-up event, men must perform 72 push-ups in 2 minutes; women must do 48. To receive a score of 90 in the sit-up event, men must do 82 and women must do 84 in a 2-minute period. To receive a score of 90 on the 2-mile run, men must achieve a time of 12 minutes and 57 seconds; women must achieve the same distance in 15 minutes and 54 seconds. A male or female receiving scores of 90 on each of these events would receive a "B" for the test.

We compared the grades of male and female cadets in physical education over their 4 years. Because of the 1990 change in the physical education course structure and the change in the way grades were compiled, we analyzed cadets' grades by class (see fig. 2.6).

Figure 2.6: Male and Female Cadets' Average Physical Education Grades



[a]Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

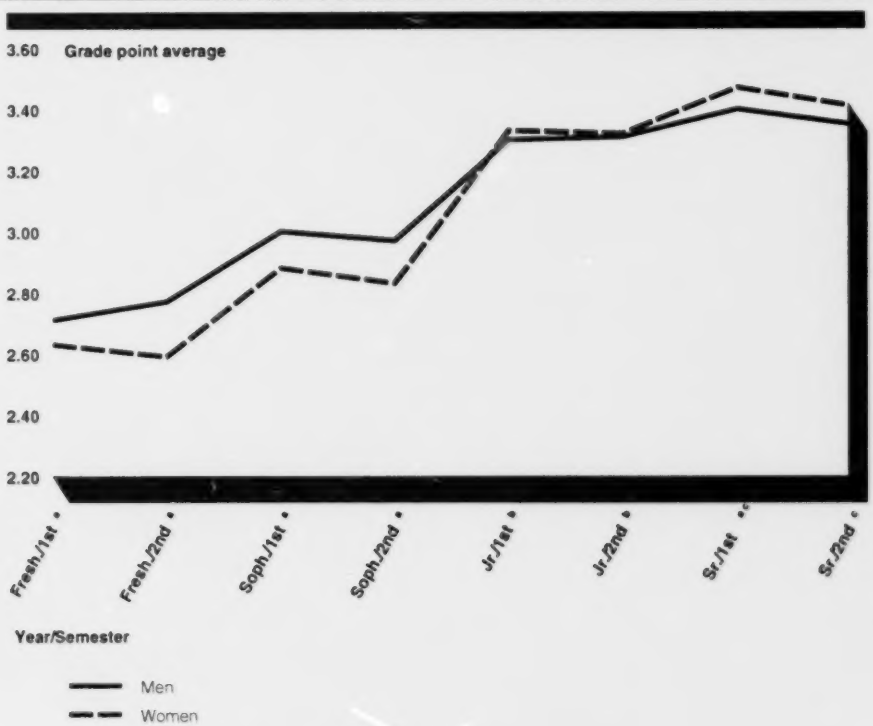
Academy officials were aware that women's grades were generally higher than men's. They were also aware that women consistently scored lower than men on the physical aptitude test administered to all candidates for admission. The Academy's director of physical education acknowledged the disparity and explained that the women attending the Academy are above average in physical conditioning and training and tend to score fairly high against the Army's physical fitness standards. However, he said that the Academy believes it is important that its physical fitness standards be linked to the Army's physical requirements.

Women's Military Performance Grades Were Generally Lower Than Men's

Military performance indicators of female cadets were lower than those of male cadets in four of the five classes we reviewed; the difference was

significant in only 1 year. The semester military development index is a primary indicator of military performance. The elements making up this index were substantially changed after graduation day in 1990 when conduct and physical education were dropped as elements of the index. As a result, we made comparisons among cadets using this index for the years before it was changed. Thus, we performed 34 comparisons[3] of semester data. Figure 2.7 illustrates the mixed results of the 34 comparisons. Female cadets' averages were lower in about two-thirds of the comparisons.

Figure 2.7: Average Semester Military Development Indexes for Men and Women, Classes of 1988 Through 1992



[a]Difference was significant using one or more tests.

[b]Contains data for the classes of 1988, 1989, 1990, and 1991.

[c]Contains data from the classes of 1988, 1989, and 1990.

Source: GAO analysis of Academy records.

[3]The comparisons involved 8 semesters of data each for the classes of 1988 through 1990; 6 semesters of data for the class of 1991; and 4 semesters of data for the class of 1992, for a total of 34 comparisons.

For the classes of 1991 and 1992 with partial data, we examined the overall cumulative military performance scores. Women's scores were lower than men's in both classes. We performed significance tests on cumulative indexes under both the old system and the new system. While cumulative indexes of women were often lower than those of men under both systems, the difference was significant in only one year.

Military development indexes are a compilation of grades achieved in various military-related endeavors. Two main components of the grades that remained constant after the 1990 change were grades in military science courses and a combination grade— referred to as military development—compiled from the ratings of military staff and higher ranked cadets. The military development grade represents a cadet's performance within the Corps.

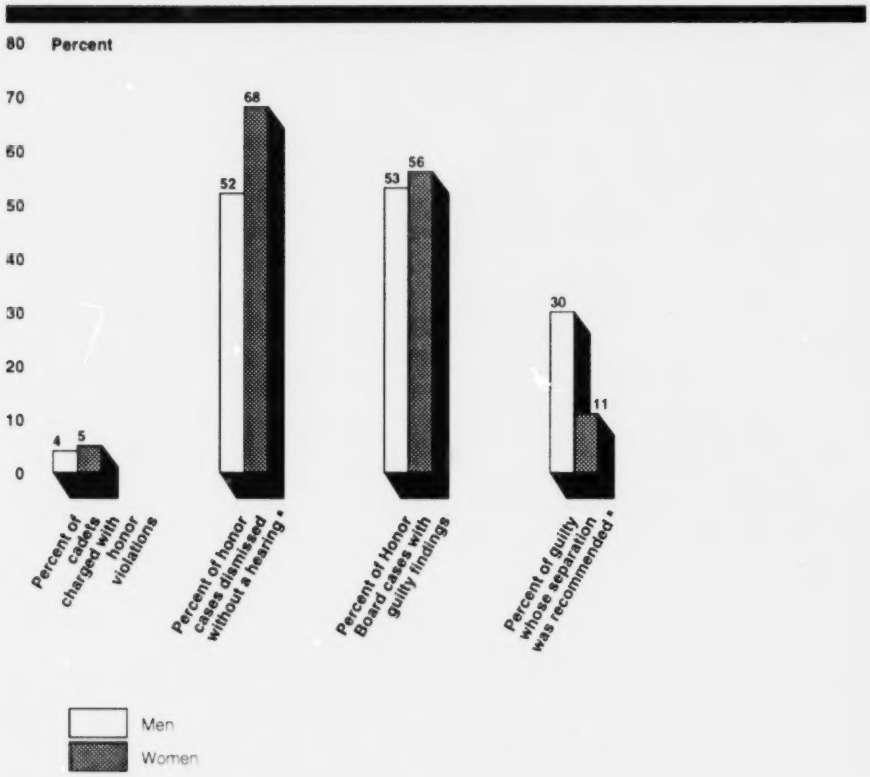
Women Were Proportionately Represented in Leadership Positions

Cadets are assigned to their positions in the Corps by the Commandant. The highest position a cadet can attain is First Captain of the Corps of Cadets. However, there are other significant leadership positions that give cadets exposure to planning and overseeing activities and to leading others. The Academy uses these assignments to both reward and challenge outstanding cadets as well as to enable some cadets to work on areas in which they are weak. Among senior cadets in the classes of 1988 to 1991 (8 semesters of data), women were selected for top positions at lower rates than men in 7 of 8 semesters.

Women's Experiences Under the Honor System Differed From Men's

Figure 2.8 shows the experience of men and women with regard to the honor system. While women were charged with violation of the Honor Code at a higher rate than men, a significantly higher percentage of their cases were dropped as a result of an initial inquiry that precedes an honor hearing. The inquiry serves to determine whether an Honor Code violation may have occurred or whether the case should not go forward to a hearing for reasons such as insufficient information. While women were found guilty of Honor Code violations at a rate higher than men, the Superintendent recommended separation for women less frequently than for men.

Figure 2.8: Male and Female Honor System Experience, Academic Years 1988-91



[a]Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

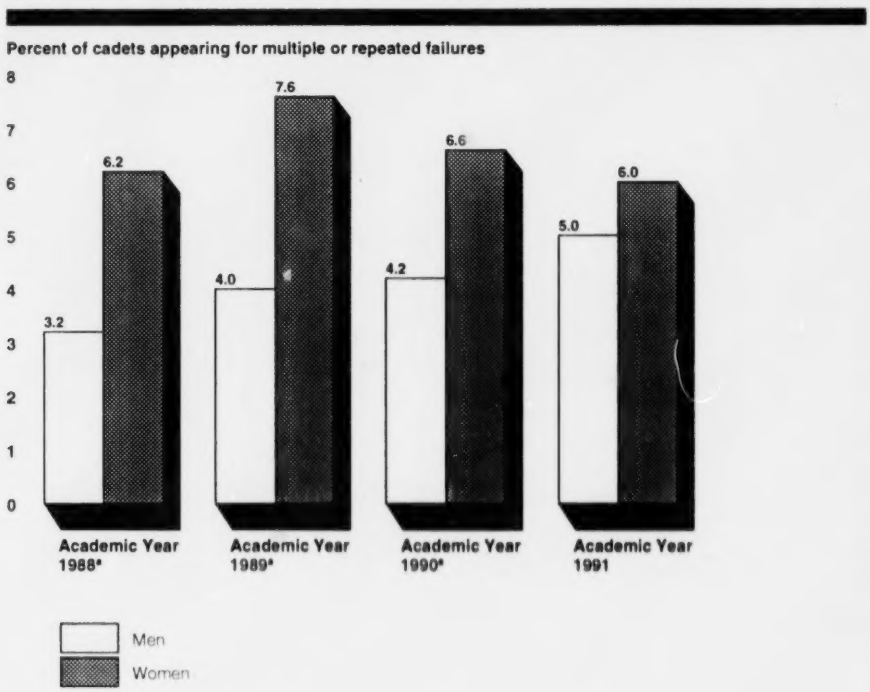
Election of Women as Honor Representatives Was Disproportionately Low

The honor system is run by junior and senior cadets who are elected by cadets to the position of honor representative. Honor representatives investigate honor charges and determine which cases should go forward, and they constitute four of the nine members of any honor board—with the others randomly selected from the Corps. For academic years 1991 and 1992, women's participation as honor representatives was disproportionately low. During academic year 1991, 1.4 percent of eligible female cadets and 4.3 percent of eligible male cadets served as honor representatives. Similarly, in academic year 1992, 0.5 percent of eligible female cadets and 4.4 percent of eligible male cadets served as honor representatives. The differences were significant in both years.

Women Reviewed More Frequently by the Academic Board for Serious Failures

For academic years 1988 through 1991, the records of female cadets were reviewed by the Academic Board for serious failures at a higher rate than male cadets, but they were generally recommended for separation at a lower rate. Our analysis included the 647 cadets who were considered as nonstandard disposition cases by the Academic Board during that 4-year period. In 3 of the 4 years, the rate at which the records of female cadets were reviewed by the Academic Board for serious failures was significantly higher than the rate at which those of male cadets were reviewed. In the fourth year, the rate at which the records of female cadets were reviewed was higher, but the difference was not significant (see fig. 2.9).

Figure 2.9: Male and Female Academic Board Appearance Rates

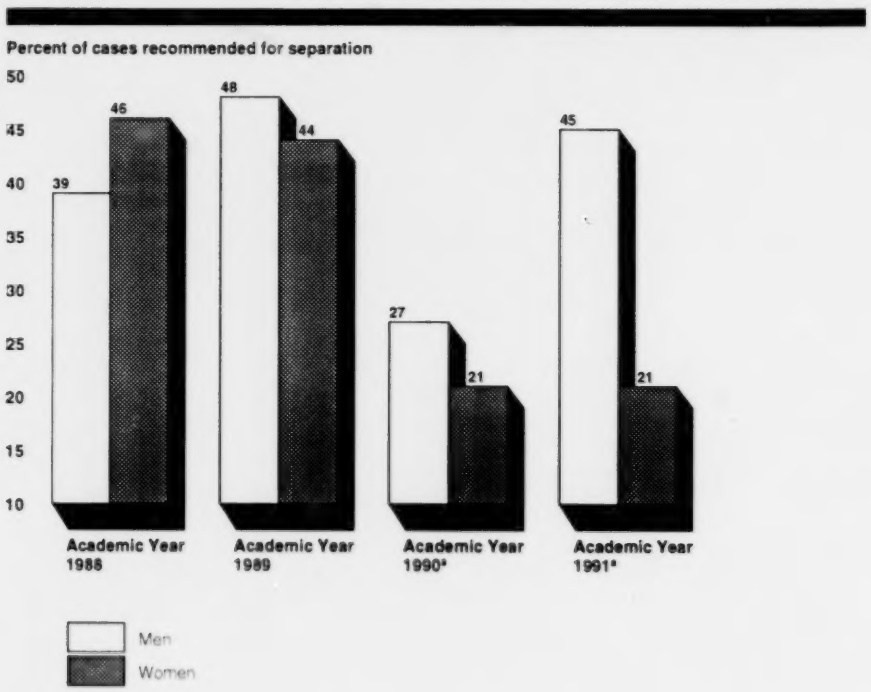


[a]Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

As a result of consideration by the Academic Board, cadets are either allowed to remain at the Academy or are recommended for separation. The rate at which women were recommended for separation was lower than the rate at which men were recommended for separation in 3 of the 4 years. The differences in the rates were significant in only two years (see fig. 2.10).

Figure 2.10: Rate at which the Academic Board Recommended Cadets for Separation, by Gender



[a]Difference was significant using one or more tests.

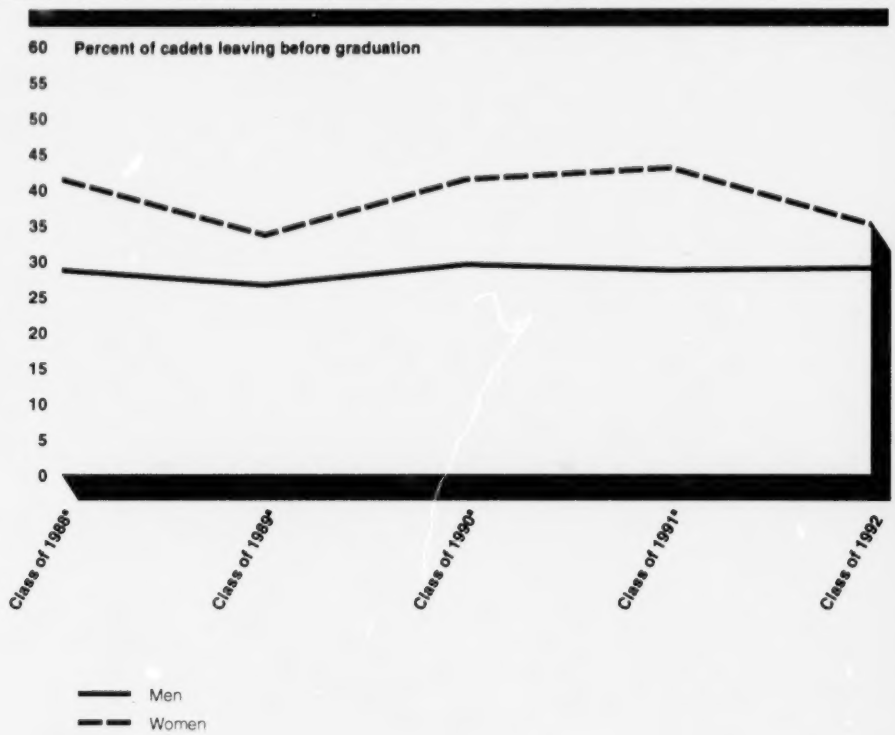
Source: GAO analysis of Academy records.

Academy officials stated that they were aware of women's higher rate of consideration in nonstandard disposition cases by the Academic Board as well as their lower separation rate. They attributed some of the problems women experience to difficulties with mathematics and some science courses. The Academy is studying this phenomenon and monitoring the studies of other researchers in this area.

Women Had Higher Attrition Rates

Since women were admitted to the Academy, proportionately more female cadets than male cadets left the Academy before graduating. For the classes of 1988 through 1992, women's attrition was consistently higher than men's, and the difference was significant on one or more tests in four of the five classes (see fig. 2.11).

Figure 2.11: Male and Female Attrition Rates



[a]Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

The Academy has studied attrition patterns extensively. Its studies show similar patterns of male and female attrition during its 4-year program, but women attrit at a higher rate. However, the studies have shown that the attrition pattern of female cadets differs somewhat from that of the male cadets during the sophomore year. Academy data on attrition of all classes

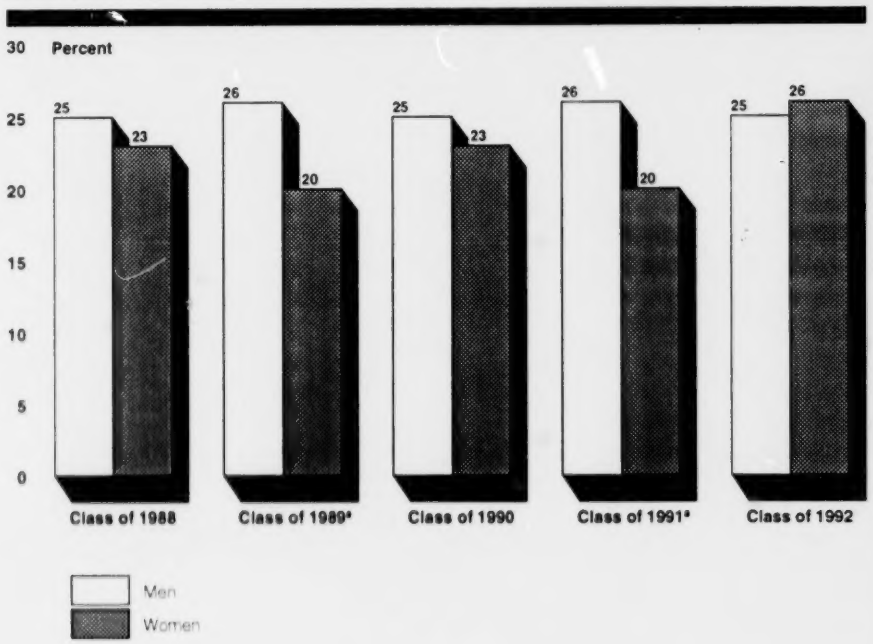
from 1980 to 1991 show that about 9 percent of all female cadets left the Academy during their sophomore year while about 4 percent of all male cadets left at this time. Some adjustments were made to the Academy program to address this difference (see ch. 4).

Women Graduated in the Top Quarter of Their Class at a Rate Close To, but Lower Than Men

Class standing is not just a compilation of grades. It is a weighted average designed to reflect a cadet's total contribution at the Academy. The computation of class standing was changed in 1990, and it currently weights academic performance as 55 percent; military performance, including all ratings from the chain of command, ratings for summer performance and course work in Military Science, as 30 percent; and physical performance, including physical education grades as well as participation in intramural, club, or varsity sports, as 15 percent. Class standing provides the order in which cadets select their Army branch and initial assignment location. It may also affect them later in their careers in competition with other officers for assignments or promotions.

The percentage of male cadets who graduated in the top quarter of their class generally exceeded the percentage of female cadets in that quartile, in the four classes of 1988 through 1991. In two of those years, the difference was significant. In the class of 1992, the percentage of female cadets in the top quarter of the class exceeded the percentage of male cadets, but the difference was not significant (see fig. 2.12).

Figure 2.12: Rates of Males and Females Ranked in the Top Quartile of Their Graduating Class



[a]Difference was significant using one or more tests.

Source: GAO anaylsis of Academy records.

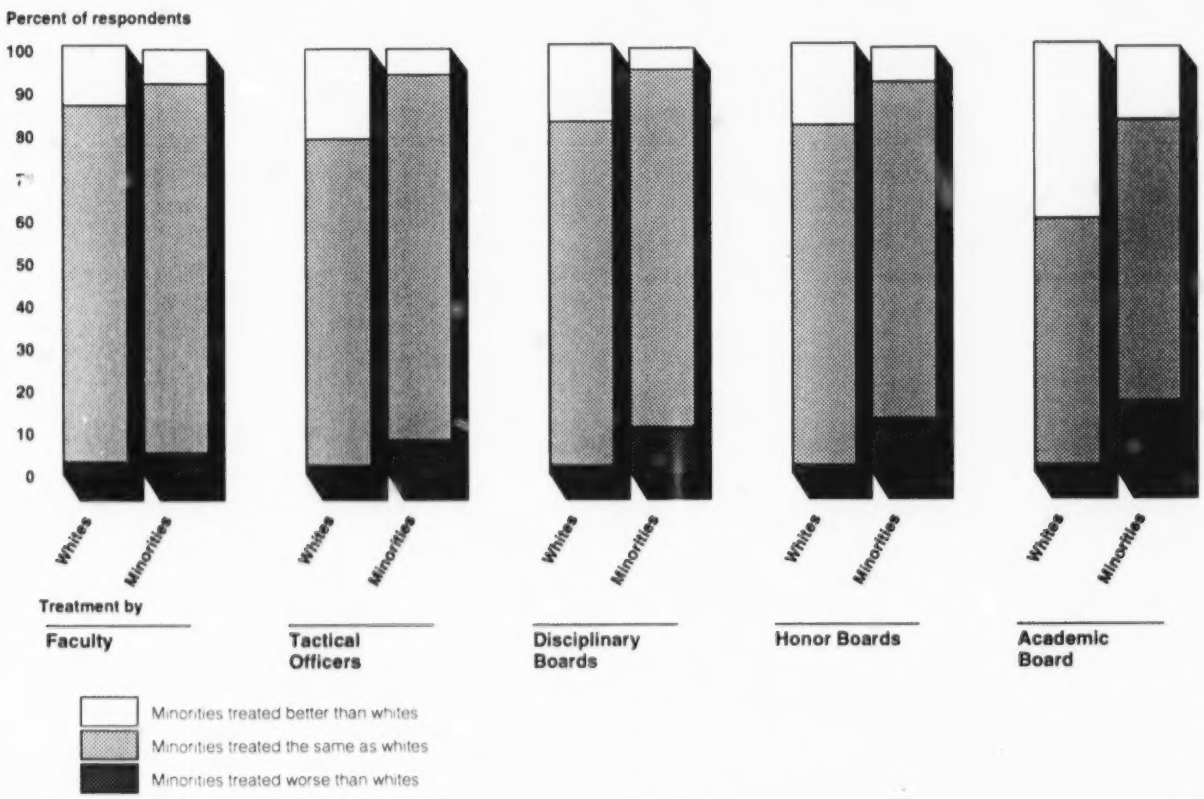
Indicators Reveal Racial Disparities

Qualified minorities were offered admission to the Academy at consistently higher rates than qualified whites. On all other indicators, however, minorities did not fare as well as whites did. Consistent differences appeared in average academic predictor scores, academic grade point averages, physical education grades, military performance scores, and class standing upon graduation. Other indicators—review by the Academic Board for serious failures and treatment under the honor system—also showed minorities to have fared worse than whites. The differences in these indicators were often significant. Most minorities and whites believed that minority cadets were treated the same as whites.

Cadets' Perceptions of the Treatment of Minorities

Our questionnaire asked respondents to indicate whether they believed minorities were treated better than, the same as, or worse than whites by faculty, tactical officers, disciplinary boards, honor boards, and the Academic Board. The majority of both white and minority cadets believed that minorities were treated the same as whites. The proportions of white and minority cadets that perceived equal treatment were similar. However, among those perceiving treatment to be different, minorities were more evenly divided as to whether the treatment was more or less favorable. Whites that indicated perceptions of different treatment for minorities generally perceived that treatment as more favorable (see fig. 3.1).

Figure 3.1: Cadets' Perceptions of the Treatment of Minorities by Various Academy Groups



Source: Responses to GAO questionnaire.

The one area in which a substantial proportion of respondents perceived a difference in the treatment of white and minority cadets was in actions by the Academic Board. Forty-one percent of whites thought minorities received preferential treatment by the Academic Board, compared to 13 percent of minorities. This perception was shared by 30 percent of Academy staff and 19 percent of the faculty. Regarding treatment by other boards, staff and faculty generally perceived equal treatment of minority and white cadets.

Most Indicators Show Whites Did Better Than Minorities

Overall, as summarized in table 3.1, we made racial comparisons across 11 indicators, covering various areas of Academy performance or experience. In 8 of the 11 indicators, the pattern of the data showed that white cadets did better: qualification rates, academic predictor scores, academic grade point averages, physical education grades, military performance scores, cadet leadership positions, attrition, and appearance in the top quarter of graduating classes. The differences were often significant. The experience of minorities was mixed with regard to the honor system and the Academic Board. Minorities were more likely than whites to be charged with an honor offense, but more likely to have the charge dismissed or be found not guilty, and more likely to be separated if found guilty. Similarly, minorities were more likely to be reviewed for serious failures by the Academic Board, but less likely to be recommended for separation. Only in regards to offers of admission did minorities fare better than whites. A discussion of these indicators and our analysis follow.

Table 3.1: Summary of Racial Comparisons

Performance indicator	Data available	Number of comparisons	Comparisons that favored minorities	Comparisons that favored whites	Comparisons that showed minorities and whites equal
Qualification rates (see fig. 3.2)	Classes of 1988-92	5	1 (0)	4 (3[a])	0
Offer rates (see fig. 3.3)	Classes of 1988-92	5	5 (5[a])	0 (0)	0
Academic predictor scores (see fig. 3.4)	Classes of 1988-92	5	0 (0)	5 (5[b])	0
Academic grade point averages by semester (see fig. 3.5)	Classes of 1988-92	40	0 (0)	40 (39[b])	0
Physical education grades by year (see fig. 3.6)	Classes of 1988-92	5	0 (0)	5 (4[b])	0
Cumulative military development grades by semester (see fig. 3.7)	Classes of 1988-92	34	0 (0[b])	33(29[b])	1
Cadet leadership positions (see text)	Classes of 1988-91	8	1[c]	7[c]	0
Honor charge, dismissal, finding of guilt, recommendation of separation, and election as Honor Representative (see text)	Academic years 1988-91	5	2 (0[a])	3 (2[a])	0
Academic Board review (see text)	Academic years 1988-91	8	3 (0)	5 (4[a])	0
Attrition rates (see fig. 3.8)	Classes of 1988-92	5	1 (0)	4(3[a])	0
Class standings (see fig. 3.9)	Classes of 1988-92	5	0 (0)	5 (5[a])	0

Note: ( ) indicates the number of significant differences using one or both types of tests.

[a]We used both a statistical significance and the 4/5ths test for these comparisons.

[b]We used a statistical significance test for these comparisons.

[c]We could not apply tests of statistical significance due to data limitations.

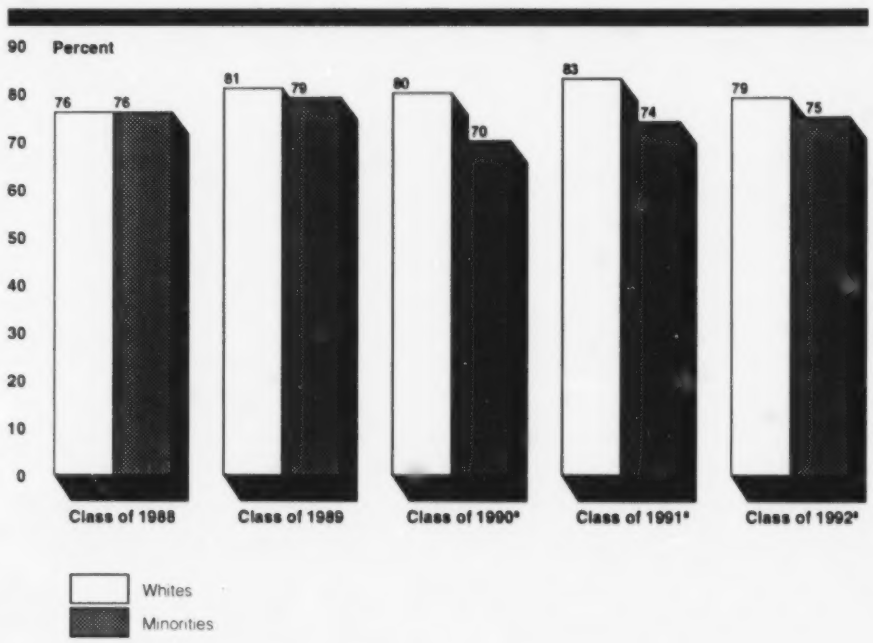
Admissions Process

Qualification Rates Were Higher for Whites

For the period 1988 through 1992, about 80 percent of all white candidates and 75 percent of all minority candidates were judged qualified. Specifically, for the class of 1988, minority and white candidates were qualified for admission at equal rates; for the classes of 1989 through 1992, minorities were qualified at lower rates than whites. The higher rate of

qualification for whites was significant in 3 of the 4 years on at least one test of statistical significance as shown in figure 3.2.

Figure 3.2: Qualification Rates for Minority and White Candidates Offer Rates Were Higher for Minorities



[a]Difference was significant using one or more tests.

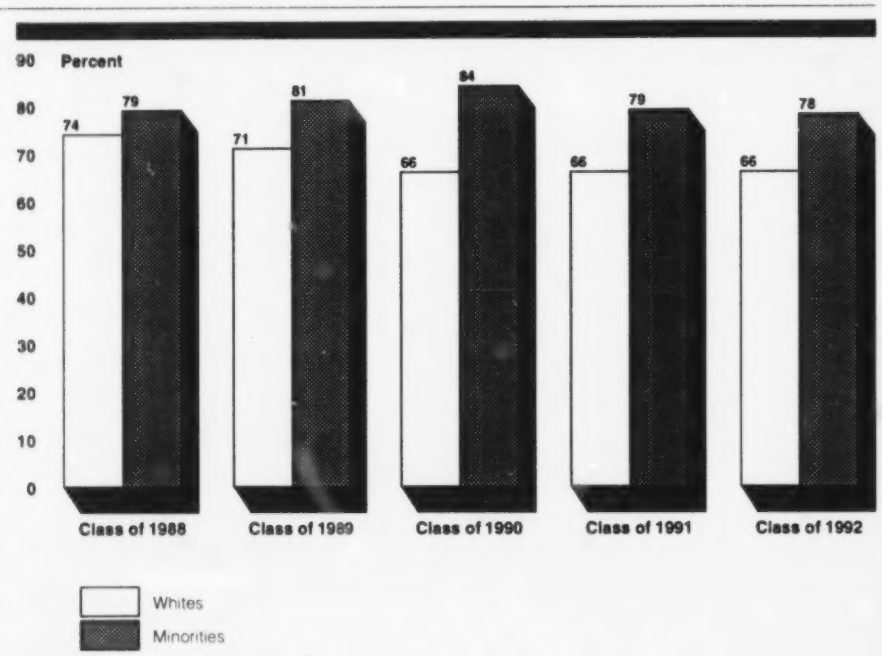
Source: GAO analysis of Academy records.

Offer Rates Were Higher for Minorities

Academy data showed that for the classes of 1988 through 1992, 80 percent of all qualified minority candidates received offers of admission from the Academy, and 68 percent of all qualified white candidates did so. The higher rate for minorities was significant for all the classes, as shown in figure 3.3. Academy officials cite the difficulty of attracting qualified minorities as a reason for the difference. That is, since minorities have historically qualified for admission at lower rates than whites, the Academy makes proportionately more offers to qualified minorities to meet its goals.

The Academy has established goals for the admission of blacks, Hispanics, and "other minorities." In recent years, the Academy's goals have been met or exceeded, except for the goal for blacks. For the classes of 1993-95, the Academy set a goal for entering classes of 7 to 9 percent blacks. Despite special recruiting programs, only 6 percent of the entering classes were black.

Figure 3.3: Rates at which Eligible White and Minority Candidates Received Offers of Admission



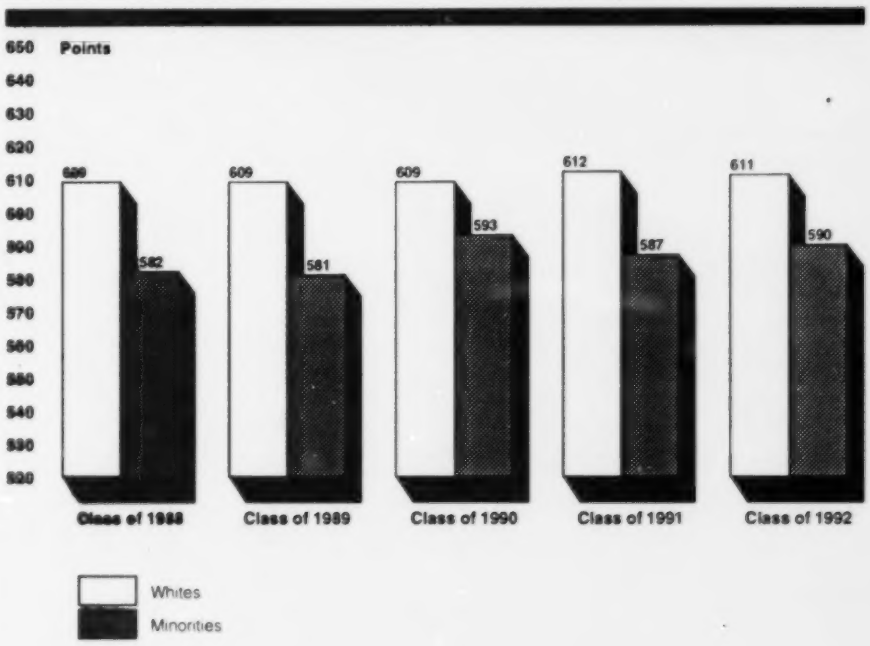
Note: All differences were significant using one or more tests.

Source: GAO analysis of Academy records.

Minorities Had Lower Academic Admissions Scores

Academy data on members of the classes of 1988 through 1992 show that the average academic predictor scores of minority cadets were consistently lower than those of white cadets. The differences were significant for all the classes, as shown in figure 3.4.

Figure 3.4: Average Academic Predictor Scores for Whites and Minorities



Note 1: All differences were significant using one or more tests.

Note 2: CEER scores below 520 indicate academic risks, scores above 650 indicate scholars.

Source: GAO analysis of Academy records.

Minorities Had Lower Grades in All Aspects of Academy Program

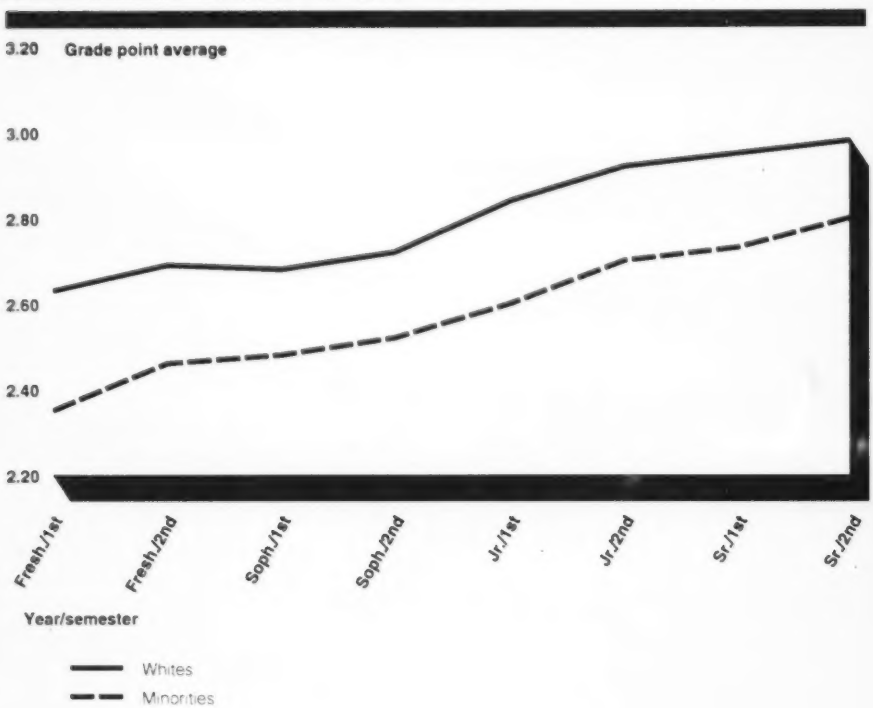
Consistent with the Academy's academic success predictor, the academic grade point averages of minorities were below those of whites. Minorities' average grades achieved in physical education and average military performance scores were also lower than whites'.

Minorities' Academic Averages Were Lower Than Those of Whites

Minority cadets in the classes of 1988 through 1992 received lower grade point averages than white cadets. This is consistent with academic predictor scores in the view of Academy officials. Specifically, cadets who enter the Academy with lower academic predictor scores (as was the case with minority cadets) are not expected to fare as well academically as those who enter with higher scores.

In contrast to the differences between female and male cadets' grade point averages, the differences between minority and white cadets' grades did not change as each class progressed through the Academy. This analysis involved comparisons for 8 semesters for 5 classes, totaling 40 comparisons. The differences in the grade point averages of minorities and whites were significant in 39 of the comparisons. The semester grades for the five classes have been combined in figure 3.5.

Figure 3.5: Grade Point Averages of White and Minority Cadets for the Classes of 1988 Through 1992, by Semester



Note: All differences were significant using one or more tests.

Source: GAO analysis of Academy records.

To assess whether observed differences between the academic grades of minority and white cadets were due to differences in academic potential that existed at the time they entered the Academy, we performed a series

of regression analyses.[1] For the classes of 1988, 1989, 1990, 1991, and 1992, we ran regression analyses on the cadets' cumulative grade point averages at the end of each of their eight semesters. Entrance predictor scores (CEER scores)[2] were entered into the regression equation as the first step, with gender entered as a second step, and race[3] added as a third step. All three variables were entered into each equation, regardless of any other criteria so that the direction of the relationship could be determined. This resulted in 40 separate regression analyses (8 each for the classes of 1988-92) where the independent effect of race could be assessed.

Overall, the Academy's CEER scores were able to account for a modest proportion (34 percent to 45 percent) of the total variation in grade point averages. After controlling for differences in CEER scores, race still explained a small (0.02 percent to 6.1 percent) but statistically significant (at the 95-percent level of confidence) proportion of the variance in grade point averages in 26 of the 40 regression analyses. All 40 regression coefficients for race were negative and ranged from –0.01 to –0.22. The average regression coefficient for race across the 40 regressions was about -.09, meaning that the grade point average of a minority cadet averaged 0.09 lower than that of a white cadet of the same gender with the same CEER score. Thus, race was correlated to some extent with academic performance beyond the difference that could be explained by differences in CEER scores.

Minorities Had Lower Physical Education Grades

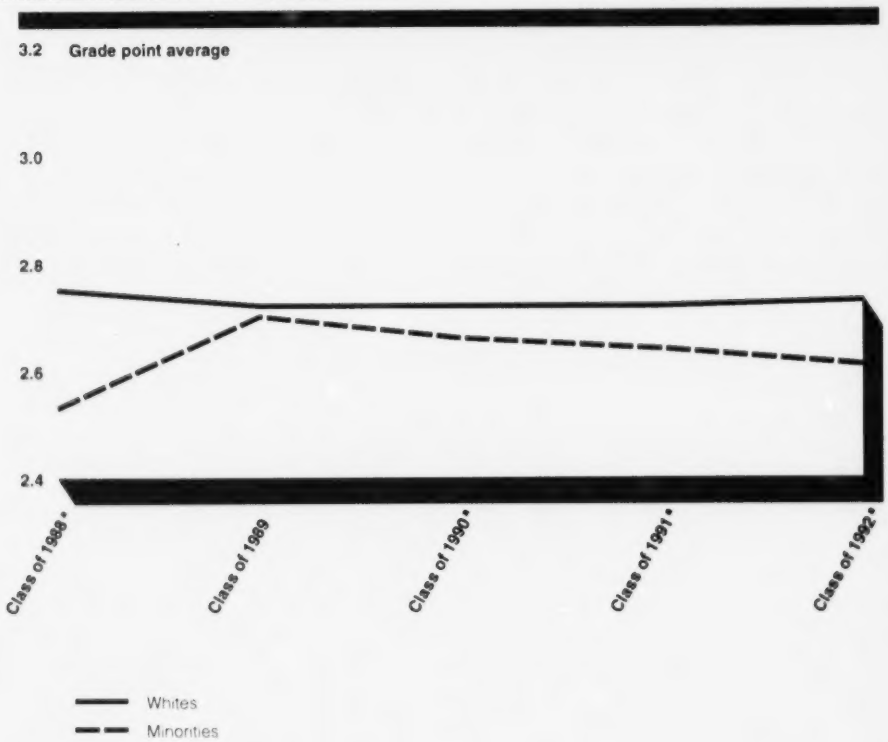
For the graduates of the classes of 1988 through 1992, minorities had lower physical education grades than whites in all five classes, on a scale of "A" equals 4.0 (see fig. 3.6). As stated in chapter 2, physical education comprises an important piece of the Academy's program, and it is a factor in a cadet's overall class ranking.

[1]A regression analysis is a statistical technique that allows the effects of multiple predictor variables to be simultaneously assessed. By entering the predictor variables into the regression analysis in separate steps, the unique contribution of a predictor variable to the variation in a criterion variable can be determined while the effects of all other measured predictor variables are controlled.

[2]We used the CEER scores as an independent variable in this analysis because they are the main indicator that Academy officials use to predict academic success. We did not examine the development of this measure, and we make no assumptions about its validity in the admissions process.

[3]Race was coded into two groups: minorities (including blacks, Hispanics, Asians, and Native Americans) and whites.

Figure 3.6: Average Physical Education Grades for Whites and Minorities



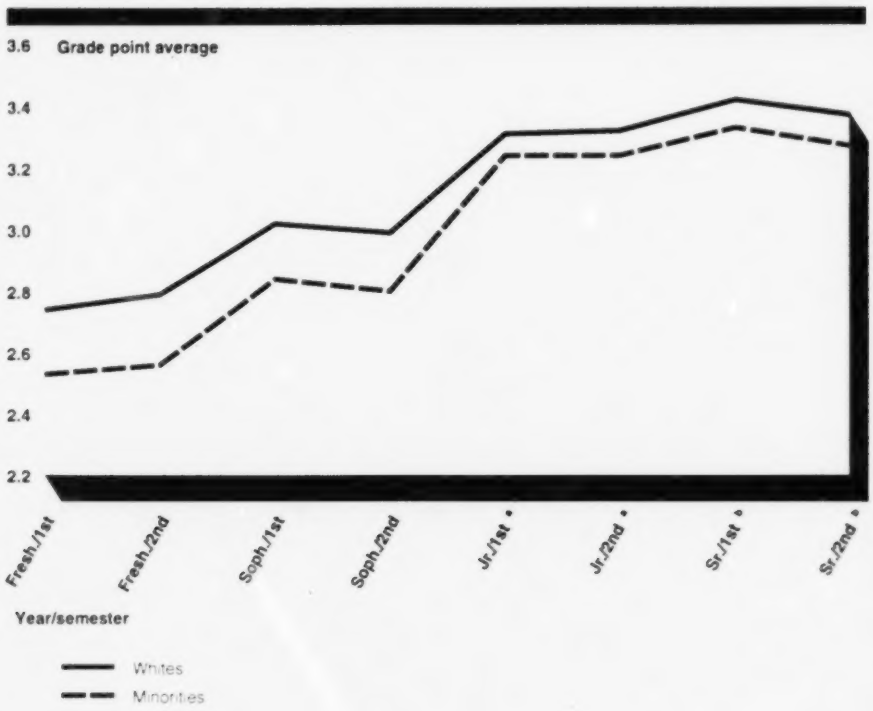
[a]Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

Minorities Had Lower Indicators of Military Performance

For the classes of 1988 through 1992, we found that the semester military development indexes of minority cadets were lower than those of white cadets in 33 of 34 comparisons. Because the factors that made up the military development index were changed in 1990, grades for cadets beginning in the fall semester of academic year 1991 were computed on a substantially different basis than the one previously used. Figure 3.7 shows the semester military development indexes earned by white and minority cadets before the change.

Figure 3.7: Average Semester Military Development Indexes for Whites and Minorities, Classes of 1988 Through 1992



Note: All differences were significant using one or more tests.

[a]Contains data for the classes of 1988, 1989, 1990, and 1991.

[b]Contains data from the classes of 1988, 1989, and 1990.

Source: GAO analysis of Academy records.

The classes of 1991 and 1992 graduated with part of their military grades computed under the old system and part under the new. We compared the cumulative military performance scores, which make up 30 percent of a cadet's class standing at graduation, for the classes of 1991 and 1992. For both classes, the average military performance scores of whites exceeded those of minorities, and the difference was significant for both graduating classes.

Minorities Selected for Top Leadership Positions at Lower Rates

Among seniors in the classes of 1988 through 1991 (8 semesters of data), minorities were selected for top positions in the Corps of Cadets at lower rates than whites in 7 of 8 semesters; the difference was significant in 6 semesters.

Minorities' Experience Under the Honor System Differed From Whites'

Although charged with violation of the Honor Code at a higher rate, minority cadets were more likely than whites to have their cases dismissed before going to an honor board, and those who went before a board were less likely to be convicted. However, minority cadets convicted of an honor violation were more likely to leave either by resignation or separation. For academic years 1988-91, the honor system reviewed 463 cases in which 410 cadets had been accused of honor code offenses. Of these cases, 88 involved minority cadets, 364 involved white cadets, and 11 cases where the official Academy record did not specify the race of the cadet.

Minority cadets were accused of honor offenses at an overall higher rate than were white cadets: 4.9 percent versus about 4.2 percent.[4] However, honor investigations resulted in the dismissal of a higher percentage of the cases involving minority cadets—59 percent of cases involving minorities were dropped compared to 52 percent of cases against whites. Differences in the rate of accusation and in the percentage of cases dismissed were not significant.

Considering the cases that went forward to an honor board, minority cadets fared better than white cadets—50 percent of minorities compared to 54 percent of whites were found guilty of violation of the code. This difference was not significant.

When found guilty, minority cadets were more likely to leave the Academy than white cadets. A total of 59 percent of minority cadets and 37 percent of white cadets either resigned or were separated from the Academy once convicted of honor violations. Having been found guilty of an honor code violation, 18 percent of minorities and 11 percent of whites resigned; 41 percent of minorities and 26 percent of whites were recommended for separation by the Superintendent. The differences in the rates of resignation and separation were significant using one or more tests.

[4]The rate is defined as the number of cadets accused of honor violations as a percentage of the cadet subgroup (minority or white) population for the time period studied.

Minority cadets were elected as honor representatives at lower rates than white cadets in 1991 and 1992. In both years, 4.2 percent of whites were elected as honor representatives, contrasted with 3.2 and 2.7 percent of minorities. The differences were significant in both years.

Minorities Generally Fared Worse in Academic Review System

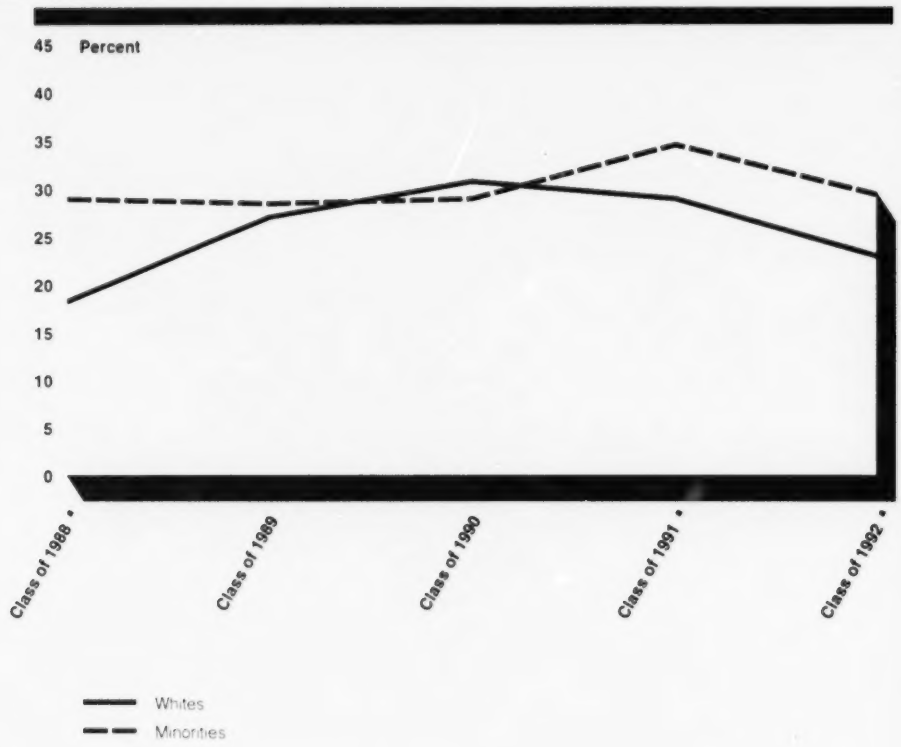
As would be expected from the analysis of academic predictor scores as well as academic and other performance data from the Academy, minority cadets were more likely to be reviewed by the Academic Board for serious failures. We examined the results of 856 Academic Board cases involving 647 cadets during academic years 1988 through 1991. A higher percentage of minority cadets than white cadets were reviewed in each of these years; the difference was significant in each year.

In cases of serious failures, the Academic Board decides on an individual basis whether to separate or retain deficient cadets. The rate of recommended separation was lower for minority cadets than for white cadets in 3 of the 4 years and higher in one year, but the differences were not significant.

Minority Cadets Experienced Generally Higher Attrition Rates

Overall, for the classes of 1988 through 1992, proportionately more minority cadets than white cadets left the Academy before graduating. A comparison of attrition rates for these five graduating classes showed that minority cadets had higher attrition rates in 4 of the 5 years. The difference was significant in 3 of those years (see fig. 3.8).

Figure 3.8: Attrition Rates for Whites and Minorities



[a]Difference was significant using one or more tests.

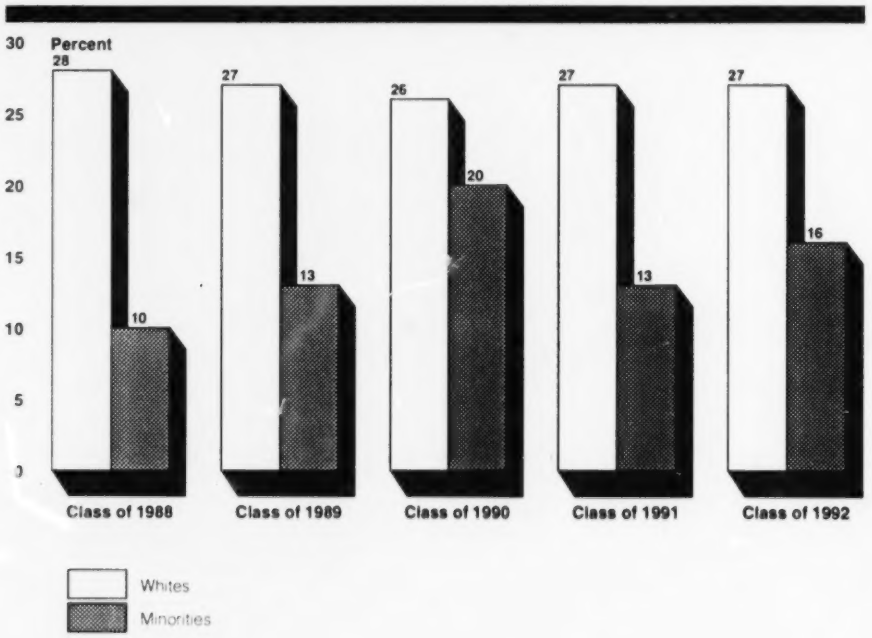
Source: GAO analysis of Academy records.

The attrition rates of minority cadets were fairly steady in the five classes whose data we examined, except for one class that experienced a rate of about 5 percentage points higher than the others. The attrition rates of white cadets have not been as constant as those of minorities. One Academy study of graduation rates showed minority graduation rates improving over the period 1976 to 1990, with an overall minority graduation rate of 70 percent for the period 1986 to 1990, compared to a 72-percent graduation rate during that period for all cadets.

Fewer Minorities Graduated in the Top of Their Classes

For the classes of 1988 through 1992, minorities graduated in the top quartiles of their graduating classes at a lower rate than whites did (see fig. 3.8). Differences were significant for each class.

Figure 3.9: Rates of White and Minority Cadets Ranked in the Top Quartile of Their Graduating Class



Note: All diffeneces were significant using one or more tests.

Source: GAO analysis of Academy records.

As noted previously, class rankings determine order of selection for Army branch and location of initial assignment and may have an impact in future years. Those graduating in the top quartile will generally receive their first preference in branch selection.

Academy Is Addressing Issues Involving Women and Minorities, but Further Actions Are Needed

The Academy has monitored the performance and experiences of women and some minority groups for many years. Compilations of the results of this monitoring have been distributed to top Academy officials, the Defense Advisory Committee on Women in the Services, and the Academy's Board of Visitors (which has advisory and oversight responsibilities). The Academy's findings were basically similar to ours—minorities have not had the success of whites at the Academy.

The Academy, however, does not routinely track data regarding the experiences of cadets under the Academic Board and the honor and conduct systems. Also, it does not assess each of the groups protected by equal opportunity guidelines and generally does not test group differences for significance. In addition, various review groups have made comments and recommendations about certain disparities in the past, but the Academy lacks a system to ensure that recommendations are addressed.

The Academy Is Aware of Cadets' Performance and Perceptions

The Academy has monitored both the performance and perceptions of female cadets since they were first admitted. Similarly, it has studied the performance and experiences of blacks and other minority groups. Reports are routinely produced by gender or race showing how cadets fared in the various stages of the admissions process, in academic achievements, in receipt of awards and recognitions, and in attrition. Some reports have also tracked cadets after their entry into active duty to evaluate the effectiveness of the Academy's program.

In the spring of each year, senior cadets are routinely surveyed concerning their experiences at the Academy. The survey asks about their perceptions of acceptance by peers and equity of treatment by other cadets, staff, and faculty. The Academy analyzes the results by race and gender. These surveys have shown that while the majority think that cadets are treated equally by other cadets, staff, and faculty, regardless of gender or race, substantial proportions of female respondents thought they had been treated differently.[1] Since 1988, the survey has asked respondents whether they agreed with the statement that the integration of women has been a success. Table 4.1 shows the results over a period of years.

[1]The wording of the questions used to compile this information does not permit us to determine the direction (positive or negative) of any perceived unequal treatment of women or minorities.

Table 4.1: Percentage of First Class Cadets Agreeing That the Integration of Women Has Been a Success

	Class					
Gender	1988	1989	1990	1991	1992	1993
Women	60	56	54	60	54	62
Men	43	50	40	43	46	60

Source: Military Academy analysis of its questionnaires

A February 1992 Academy report to the Defense Advisory Committee on Women in the Services concluded that cadets of both sexes tended to agree that gender integration had been successful. However, it pointed out that "vestiges of resistance" to women at the Academy continued to persist and that concerns such as perceived special treatment, differential physical standards, impact of the combat exclusion policy, privacy in field environments, and incidents of harassment must continue to be addressed.

Reports similar to those produced on women have compared the experiences and performance of blacks to those of other groups. Special reports have also been produced on Hispanic, Asian American, and Native American cadets. However, Academy officials told us that because of limited resources and the small numbers in some of the minority groups, experiences and achievements of these other groups protected by Department of Defense Equal Opportunity guidelines are done less frequently.

Recent senior surveys administered by the Academy asked a question on cadets' perceptions of the success of integration of minorities into the Corps. Cadet responses showed that some cadets perceived problems in this area (see table 4.2).

Table 4.2: Percentage of First Class Cadets Agreeing and Disagreeing That the Integration of Minorities Has Been a Success

	Percent who agree or strongly agree			Percent who disagree or strongly disagree		
Racial/ethnic group of respondent	Class of 1991	Class of 1992	Class of 1993	Class of 1991	Class of 1992	Class of 1993
White	64	65	74	19	24	18
Black	39	51	37	46	44	47
Hispanic	58	67	68	24	15	24
Asian	74	83	72	13	14	21

Source: Military Academy analysis of its questionnaires

The Academy Has Taken Steps to Enhance the Integration of Women and Minorities

In response to its monitoring of cadets' perceptions and experiences, the Academy has changed several aspects of its academic, military, and physical training programs. In recent years, the Academy's assessments have resulted in changes to its overall program. Academy officials said that the impetus for some of the changes was the desire to strengthen the leadership skills of cadets in recognition of the diversity of today's Army. Other initiatives were developed by its Human Resources Council (HRC), a group of senior officers who have been specifically charged with assessing the climate of the Corps.

Adjustments to Training

During recent years, the Academy has added some training to its curriculum for cadets, as well as for incoming staff and faculty, designed to increase awareness of treatment of women and minorities. Additionally, the material used in existing courses was updated.

In 1990, the Academy implemented its Cadet Leader Development System under which cadets experience and practice various levels of leadership responsibility. One of the foundations of the leader development system is consideration of others, including non-toleration of sexual/racial harassment or discrimination. Throughout the 4-year program, cadets receive leadership and human resources training that includes emphasis on equal opportunity issues. Such training progresses from an introduction to equal opportunity principles and their importance to unit cohesion to command climate, including equal opportunity and harassment issues that might be encountered on active duty. During academic years 1993 and 1994, this training was reviewed and updated as part of an effort to increase the awareness of cadets about these subjects. Cadets have also been required to attend a series of seminars developed through the HRC concerning current issues, including date rape and sexual assault.

For incoming staff and faculty, the Academy requires training in prevention of sexual harassment. It also requires training designed to increase awareness among instructors and others of the impact of subtle and overt actions, intentional or not, that have the effect of singling out female or minority cadets. The latter training consists of filmed vignettes and group discussion, including discussion of the behavior of individuals in subgroups that make up less than about 20 percent of the total population.

The Academy has also made changes as a result of evaluations of its programs. For example, monitoring of attrition data showed that female

cadets left in larger proportions than male cadets in their sophomore year. A 1991 analysis of the summer field training experience of cadets just prior to the beginning of their sophomore year showed that it was perceived to be mostly combat-related and thus emphasized areas from which women were excluded. Small changes in emphasis were made to make this training more relevant to all cadets.

Programs to Assist Academic Risks

Each year some of the new cadets who are admitted are considered academic risks. Such at-risk candidates are taken to fill such goals as those for athletes, for cadets from more remote areas of the country, or for racial or ethnic diversity. To help these cadets perform successfully, the Academy has provided remedial and study skills classes. For example:

- The Academy requires new cadets whose records indicate background deficiencies in mathematics to take a course designed to provide them with the necessary preparation for the Academy's program. Requirements for this course include participation in a seminar that emphasizes study skills that are especially useful in mathematics.
- In academic year 1992, the Academy began offering a remedial course for those cadets who encountered problems with English.

For academic year 1993, the Academy performed special assessments of all incoming plebes identified as high academic risks. Approximately 80 cadets were identified and encouraged to attend a semester-long seminar on improving study skills. Sixty-six of the cadets agreed to complete the study skills course. While enhancement courses were available on a voluntary basis in the past, this was the first year that cadets other than those with mathematics deficiencies were specifically recommended for such assistance. The Academy has plans to evaluate the effectiveness of the program by comparing a group of students who complete the course with a control group of similar students from the prior year who did not take the course.

Human Resources Council Established

During 1988-89, the Academy underwent a review in connection with its decennial accreditation process. Prior to a visit by the accreditation team from the Commission on Higher Education of the Middle States Association of Colleges and Schools, the Academy conducted a self-study. The Academy concluded that, in general, it had made substantial progress in the integration of women and minorities into the Corps. However, it noted that the most troubling unresolved problem was the continuing low,

but significant, levels of covert individual rejection of women and, to a lesser but still troubling degree, minorities. It noted that women reporting incidents of harassment felt victimized by the process of enforcement and therefore were reluctant to report incidents.

The accreditation team confirmed that the assimilation of women had met with considerable success, but not without a number of continuing conflicts, ambiguities, and problems. It also reported that it had been consistently advised by Academy personnel that the integration of minority cadets into the Corps was no longer an issue. However, the team observed that some black cadets believed their concerns were ignored because women had replaced them as the newest group within the Academy, and some felt not accepted in their roles as cadets.

The accreditation team concluded that some subtle forms of racism and sexism continued to exist within the Academy because the Academy was a cross-section of American life. It urged the Academy to consider whether treating everyone the same was treating everyone fairly. Further, it endorsed the Board of Visitors' recommendations and urged that more minorities and women be recruited to serve on the staff and faculty as role models for all of the cadets. Lastly, the team encouraged the Superintendent and the Commandant to help the staff and faculty address their attitudes about women at the Academy and to ensure that the administration was kept constantly apprised of issues affecting women and minorities. Soon thereafter, the HRC was established to ensure emphasis throughout the Corps on respect for human dignity and diversity.

The HRC's first action was to develop the training for instructors and others on preventing different treatment of female or minority cadets. Another effort of this group was to identify date rape, or date crimes, as an issue of concern on many private and public campuses. Acting to prevent this from becoming an issue at the Academy, the HRC developed training consisting of live vignette performances accompanied by discussion of the issues. Recently, the HRC developed training on cadet eating habits and eating disorders, another major issue on American campuses.

The Academy Lacks Consolidated Data Base for Tracking Disparities in Adjudicatory Systems

While the Academy collects and maintains a large amount of data on student performance and experiences, some key areas of cadet experience are available only on hard-copy records. Thus, we had to extract the information we analyzed concerning cadets' experience with the Academic Board and honor systems from Academy paper files. The difficulty and time consumed in doing this limited the number of periods we could assess in these areas. In addition, we were not able to analyze cadet experiences regarding the conduct system because of uncertainties about the completeness and accuracy of the cadet conduct data. Academy officials said they assure the fairness of these systems through a review of negative actions of these systems and an analysis of system procedures. However, they do not perform analyses such as comparisons of rates at which cadets are reviewed by the systems. Thus, key areas of student treatment are not presently being routinely tracked and analyzed.

The Academy Lacks a System to Monitor Recommendations Until Resolution

The Academy has done an extensive amount of self-study and has also been the subject of external reviews. However, the Academy has no system for compiling and tracking actions regarding recommendations. When comments and recommendations are repeatedly made over time and little or no change has occurred, it is not possible to determine whether the implementation of a recommendation was (1) attempted and was unsuccessful at addressing the problem, (2) not attempted because Academy officials disagreed with it, or (3) not attempted because of other priorities or because it was forgotten.

Effective management practices require managers to promptly evaluate findings and recommendations, determine the appropriate actions in response, and complete actions to resolve the situation. With regard to the issues of gender and racial disparities, the Academy had no system to ensure such resolution of findings and recommendations.

Academy officials appear to have discounted the results of some studies, but they have not documented the data and rationale that have led them to take no action. For example, an Academy official said that overall, the entry scores of minority cadets have been lower than those of other cadets and therefore lower grade point averages would be expected. Thus, the Academy has not viewed any further exploration of the situation as necessary. However, our regression analyses showed that race was correlated to some extent with academic performance beyond the difference that could be explained by differences in CEER scores (see ch. 3).

According to Academy officials, they collect and maintain cadet performance data and survey results to identify trends and patterns occurring over time. However, they do not generally use measures such as those we used (e.g., statistical tests, the four-fifths test, and a regression analysis) to determine when differences in the data may indicate significant disparities between various groups that need to be addressed.

Conclusions

Despite the Academy's extensive self-evaluation, it has not routinely studied the effects or results of its adjudicatory systems (such as the conduct and honor systems), which can result in the separation of a cadet from the Academy. Instead, the Academy has relied on extensive review of each case in which a cadet has been found deficient. However, use of this approach can result in gender and racial disparities in areas such as charge rates going unnoticed.

The Academy has monitored the grades, honors, and achievements of some groups of cadets for many years. However, the Academy does not routinely monitor each group that is protected by Department of Defense Equal Opportunity guidelines. The Academy also has not routinely applied statistical analyses to the data to determine which differences are significant. In addition, the Academy does not have a system to ensure that study results and recommendations are implemented into action plans.

Recommendations

As part of the Military Academy's efforts to ensure fair and equal treatment of all cadets and to improve efforts to monitor gender and racial disparities, we recommend that the Superintendent of the Academy

- develop data systems that will permit the routine analysis of the honor, conduct, and academic board systems at the Academy for gender and race differences;
- routinely monitor and compare performance indicators for all groups designated in Department of Defense's Equal Opportunity Program and establish criteria for assessing when disparities warrant more in-depth attention and corrective action; and
- establish a system to effectively monitor and document the actions taken in response to the recommendations of oversight and review groups.

Description of Questionnaire Methodology

This appendix describes our questionnaire development process, sampling approach, response rates, weighing of data, processing of completed questionnaires, sampling error, and other methodological issues. This report is part of a broader review of the Department of Defense's service academies. That review focuses on academics, military performance measurement, hazing, harassment, and the operation of academy adjudicatory systems in addition to the treatment of women and minorities.

Questionnaire Development

We developed questionnaire items to address the full scope of the broader review. We pretested the questionnaire with a diverse group of cadets, staff, and faculty. The cadets represented different classes, genders, and races. The questionnaire was also extensively reviewed by (1) Military Academy officials, (2) the Defense Advisory Committee on Women in the Services, and (3) our consultants familiar with the academies.

Sampling Methodology

To ensure that an adequate number of female and minority cadets were included, we used a stratified random sample design allowing us to oversample those two groups. We used the last digit of the social security number to randomly select respondents from each strata.[1] We selected one final digit for all cadets and an additional final digit for women and minority males. Our goal was to produce a sample of about 10 percent of white males, 20 percent of females, and 20 percent of minority males. We also surveyed all available student-contact personnel on the Commandant's staff and about 25 percent of the faculty.

Questionnaire Response Rates and Weighting of Data

We administered the questionnaires in March 1991. We assured respondents of anonymity, and we did not take attendance. We received completed questionnaires from 469 of the 546 Academy cadets in our sample (a response of about 86 percent). Since we oversampled on the female and minority subgroups, we applied weights to the responses in order to allow them to represent the total Academy population. We computed raw weights by dividing the number of subgroup responses into the subgroup population.

[1]The last four digits of social security numbers constitute a random field based on the order in which individual social security offices process the applications they receive. Selecting one final digit can be expected to yield a sample of about 10 percent.

Sampling Error

Since we surveyed samples rather than entire populations, the results we obtained were subject to some degree of uncertainty, or "sampling error." Sampling errors represent the expected difference between our sample results and the results we would have obtained had we surveyed the entire populations. Sampling errors are smallest when the percentage split responding to a particular question is highly skewed, such as 5 percent responding "yes" and 95 percent responding "no." Sampling errors are greatest when there is about a 50-50 percentage split in responses.

On the basis of the number of completed questionnaires, we estimate that our results can be generalized to the cadet population at the 95-percent confidence level, with a maximum sampling error of plus or minus 4.4 percent.

The sampling errors for various subgroups cited in this report appear in table I.1. The decimal figures in the table are the sampling errors that correspond to various percentages of respondents selecting a particular response alternative. For example, if we state that 10 percent of the cadets responded in a given way (i.e., there was a 10-90 percent response split), according to the table, the sampling error is 2.9 percent. This means that we can be 95-percent confident that the percentage of cadets responding that way in the population is within 10 percent plus or minus 2.9 percent, or between 7.1 percent and 12.9 percent.

Table I.1: Sampling Errors for Various Academy Subgroups

			Percentage split in responses									
Subgroup	**Population**	**Sample**	**05/95**	**10/90**	**15/85**	**20/80**	**25/75**	**30/70**	**35/65**	**40/60**	**45/55**	**50/50**
All cadets	4,296	469	2.3	2.9	3.2	3.5	3.8	4.0	4.2	4.3	4.4	4.4
Men	3,842	393	2.5	3.2	3.7	3.9	4.2	4.4	4.6	4.7	4.8	4.8
Women	454	76	7.0	8.4	9.1	9.8	10.3	10.6	10.5	10.8	10.9	11.0
Whites	3,582	357	2.7	3.4	3.9	4.1	4.4	4.7	4.8	5.0	5.0	5.1
Minorities	714	112	5.5	6.5	7.4	7.9	8.3	8.3	8.6	8.8	8.9	9.0

Analysis of Academy Data

Type and Sources of Data

During our review, we analyzed the computerized records of over 10,800 cadets from the classes of 1988 through 1994. We converted these data into a different format for statistical analysis. We did not verify the computerized information we obtained from the Academy, but we did review the reformatted information for accuracy and reliability. Data that were missing or in error were eliminated before our analysis was conducted. We then developed data files for each semester and class. We developed information on semester academic grade point averages, physical education grades, military performance indexes, leadership positions within the Corps, attrition, and class standings.

The Military Academy was generally able to provide computerized data covering the classes of 1988 through 1994. However, we generally restricted our analysis to the fully completed classes of 1988 through 1992, the five classes for which we had all 4 years' worth of data (for freshmen through senior years).

Other kinds of information were available either on different data bases or only from hard-copy records. Consequently, we extracted data from hard-copy records maintained by the appropriate Academy body. The following is a summary of the types of data and sources we used:

- The Office of Institutional Research provided us with statistics on the numbers of candidates for admission, qualified candidates, and admissions offered by gender and race for the classes of 1988-95.
- The Academic Board allowed us access to the hard-copy files it maintained on its decisions. We extracted relevant information from all the students who appeared before the Academic Board for serious failures (nonstandard disposition cases) during academic years 1988-91.
- The Commandant's office provided us with hard-copy files containing all honor offense cases charged during academic years 1988-91. We extracted information on the type of offense, the date of the offense, the dates of hearings and decisions, the decisions, and the recommended punishment. We identified the gender and race of cadets involved by matching their names and social security numbers with our computerized data base.

Assessment of Disparities

The information we used to compare the various subgroups is "population data"—that is, it includes every cadet enrolled in that class. Therefore, any observed differences between subgroups are actual differences since there is no sampling error in population measurements. However, to avoid misinterpreting the importance of differences or placing too much

emphasis on small numerical differences, we assessed how substantive any observed differences were. In effect, we treated the various populations, such as each of the classes of 1988-92, as if they were subpopulations of a larger population.[1]

To assess whether any regularity existed with regard to the direction of observed differences, we counted the number of times each subgroup was lower or higher on each measure for each period examined.

We used various tests to assess whether a given observed gender or racial disparity was sufficiently large that we could rule out chance as the cause.

The "Four-Fifths" Test

We adopted the "four-fifths" test as one measure of whether an observed difference between two groups was significant. This test is similar to the rule of thumb established by the four federal agencies responsible for equal employment opportunity enforcement (the Department of Justice, the Department of Labor, the Equal Employment Opportunity Commission, and the Office of Personnel Management) for determining whether differences between subgroups in the selection rates for hiring, promotion, or other employment decisions are significant.[2]

Under the four-fifths test, a selection rate for a subgroup that is less than four-fifths (or 80 percent) of the rate for the group with the highest selection rate is considered a substantially different rate. We recognize that others have applied the four-fifths test only to selection rates for actions involving positive consequences. However, we judgmentally chose to apply the four-fifths test to both selection and nonselection indicators (such as academic grades). We also chose to transform the four-fifths formula to decisions involving negative consequences, such as honor offense, attrition, and academic failure rates. We used "greater than 125 percent" (five-fourths) as an indicator of a significantly higher rate for a negative consequence. That is, for a negative consequence (such as an honor conviction), a rate of more than 125 percent of the rate for the subgroup with the lower rate would be considered a significantly different rate.

[1]For a discussion of applying statistical significance tests to population data, see R.E. Henkel, Test of Significance(Beverly Hills, California: Sage Publications, 1976), pp.85-87; and M.J. Hagood, "The Notion of a Hypothetical Universe" in D. E. Morrison and R. E. Henkel (eds.), The Significance Test Controversy: A Reader(Chicago: Aldine Publishing Company, 1970).

[2]See the Uniform Guidelines on Employee Selection Procedures(29 C.F.R. section 1607). We recognize that title VII of the Civil Rights Act of 1964, which protects individuals against employment discrimination, does not apply to the uniformed members of the armed services. See Roper v. Department of the Army, 832 F.2d 247 (2nd Cir. 1987).

Chi-Square Test

For categorical data, such as whether a cadet was charged with an honor offense or not, we used the chi-square test to assess whether the difference between subgroup proportions was significant. We used the standard 0.05 level of significance, meaning that we accepted a difference between subgroups as statistically significant if there was a 5-percent or less chance of getting a difference that large if there were no real difference between the subgroups.

T-Test

For continuous data, such as academic grade point averages, we used the t-test to assess whether the subgroup means were substantially different. We first assessed the variances of each subgroup on each measure to determine whether or not they were approximately equal. If the variances were equal, we used the pooled-variance formula for the t-test. If the variances were unequal, we used the separate-variance formula for the t-test.[3] We used the standard 0.05 probability of error as a criterion for assessing statistical significance.

Each Kind of Test Is Problematic

Both the chi-square and the t-tests are relatively sensitive to differences under some circumstances, but they are relatively insensitive under others. The tests that we used tend to be reactive to the number of cases. For example, when few people are subject to a particular kind of action and the resulting number of cases is therefore small, relatively large subgroup differences may not reach statistical significance. As the number of cases increases, smaller differences between subgroups become significant. The four-fifths test, since it focuses solely on the ratio of the two rates, is unaffected by the number of cases and is therefore sensitive to differences even when the number of cases is small. However, when the number of cases is large, resulting in more stable rates, the four-fifths test may provide too much latitude before a difference would be seen as significant.

Since none of the tests was wholly satisfactory, we chose to apply multiple tests. If we found a difference to be significant under any of the tests, we considered that difference to be significant.

[3]SPSS User's Guide, 3rd ed. (Chicago: SPSS, Inc., 1988).

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